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XII

LAND LAWS

OF

MINING DISTRICTS

"When a new placer or gulch was discovered, the first thing done was to elect officers. In a region five hundred miles long, inhabited by 100,000 people, who had neither locks, bolts, regular laws of Government, military or civil protection, there was as much security to life and property as in any State of the Union. The rights of each digger were definitely marked out and observed."—*Bayard Taylor, in "Eldorado."*

"A special kind of law, a sort of common law of the miners, the offspring of a nation's irrepressible march . . . has sprung up on the Pacific Coast, and presents in the value of a "Mining Right" a novel and peculiar question for this Court."—*Decision of Chief Justice Chase, December*, 1865. *Case of Sparrow vs. Strong.*

"The miners . . . found no laws governing the possession of claims. The reason and justice of the laws they framed challenge the admiration of all who investigate them. Each mining district in an area of not less than 20,000 square miles formed its own rules and adopted its own customs . . . guarding against every form of monopoly and requiring continued work and occupation."—*Speech of Senator Stewart, June*, 1866.

"The bill proposed adopts the rules and regulations of miners." They "are well understood, and form the basis of the present admirable system. Popular sovereignty is here displayed in one of its grandest aspects, and simply invites us not to destroy, but to put upon it the stamp of national power and unquestioned authority."—*Report of Chairman Conness, of the Senate Committee on Mines and Mining, May* 22, 1866.

"Whenever institutions have grown up of themselves . . . they become a matter of scientific study. They are part of the general institutions of the English people, as these are again part of the general institutions of the Teutonic race, and these again part of the general institutions of the whole Aryan family."—*Edward A. Freeman, in his "Introduction to American Institutional History," University Studies, First Series, No.* 1.

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HERBERT B. ADAMS, Editor

History is past Politics and Politics present History — *Freeman*

SECOND SERIES

XII

LAND LAWS
OF
MINING DISTRICTS

By CHARLES HOWARD SHINN, A. B.

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LAND LAWS
OF
MINING DISTRICTS.[1]

In the autumn of 1878 the writer, then teaching school in a little Mining Camp of Trinity County, California, witnessed the practical operations of "rules, usages and customs" in regard to local government over well-defined areas known as "Mining Districts," of which there were a number in the county. One, then newly organized, lay partly within the limits of two counties, but it was governed easily and well by the citizens of the District, according to a code whose more important features had been evolved amid the stress and strain of the pioneer days of 1848 and 1849. County officials existed, townships and supervisors were parts of the State system, school-districts had been laid out years before, but along Weaver Creek, and in the bends of the yellow and foaming Trinity River, men were still holding "claims" and regulating their business relations with each other by local laws; and in camps further removed from stage roads, county-seats and agricultural communities, the "Laws of the District" covered a broader range, and still dealt with many subjects besides land-tenure. Again, in the spring and summer of 1879, while a special travelling correspondent for the San Francisco Daily *Bulletin*, the writer explored the mining region of the Sierra counties of California, became acquainted with pioneers, and visited many of the famous old camps. Here, also, the influence of the past was, and is, evident in varied and powerful survivals; the institutions that American freemen created in time of need for the protection of life and property, have shown an abiding strength and endurance. This phenomenon of a still surviving and respected local land law deserves more attention than it has hitherto received from historians of the Far West. Viewed in its larger relations, as a curious chapter in the record of social experiments made by men of our Germanic race, the entire Code of the Early Mining Districts, or Camps, has a more than local value. In that Code, with its multifarious variations and eccentricities, its curiosities of legislation, its mingling of forms borrowed from alien races, its underlying common-sense and dignity, there is no department more important than that which was devoted to the acquisition and tenure of mineral lands in the several districts at a time when neither State nor General Government had as yet assumed control.

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[1] This essay forms a portion of an investigation into the entire history of Mining and Mining Camps, ancient, mediæval and modern, with a hope of giving the forms of social organization manifest in the early "Districts" of the Sierras, Coast Range, and Rocky Mountains, their proper place in the story of institutional development upon American soil. Some part of the material here presented will re-appear in a volume entitled "Mining Camps, a Study in American Frontier Government," which will be published early in 1885 by Charles Scribner's Sons, New York. Portions of this work were read last year before the "Historical and Political Science Association" of the Johns Hopkins University. An article upon "California Mining Camps," in the "*Overland Monthly*" for August, 1884, one upon "The Golden Prime of Forty-Nine" (illustrated), which appeared in the "*Magazine of American History*" for November, and one upon "Enactments of the Early Miners," to appear in the *Overland* for the current month, December, comprise the author's publications in this field.

Mr. Shinn's work is a natural, although unconscious, continuation of Mr. Johnson's study of "Rudimentary Society Among Boys," *Studies, Second Series*, XI. This paper might be called Rudimentary Society Among Men.—ED.

Before entering upon a discussion of the features which distinguish this department of the Miner's Code, we may say, in general terms, that it is difficult to set forth the supreme importance of laws which govern the ownership of land. The social, economic, and political history of the human race has turned upon the pivot of changes in systems of land tenure, and here is a battle-ground of the future, as of the past. Nothing which serves to illustrate the workings of any land system, or of any method by which in practice lands were held, can ever be called irrelevant or worthless, for the entire field of study is so broad, and is broken into so many angles that each ray of light is needed for its illumination. The best thoughts of writers of the highest ability have been devoted for many years past to studies of early land tenure under simple conditions of life in primitive agricultural communities, and to the potent social and political causes which slowly substituted private ownership of land for the rule of the village, and the authority of the old Teutonic field meetings. The study of Germanic Land-laws, as taking shape in free discussions of folk-moot assemblies deep in the Swabian Mountains, and as modified in Saxon and Norman England, does undoubtedly appear to offer the most attractive single field of investigation known to institutional history. Nevertheless, we shall find, if we sufficiently examine the local institutions of America, that a contribution of real interest and value has been made to the land-laws of our race, springing into existence naturally, as all such things must, from the character of the people and the exigencies of their situation.

Therefore it is to the American miner of the region west of the Mississippi, that we must look for the adoption, in time of need, of this definite and efficient system of local government for hundreds of small communities known as Mining Camps, or Districts, and possessing under a multiplicity of forms, those essential safeguards of life and property that the true pioneers, from our Aryan stock, have always been able to secure. To-day, over the Western third of the United States institutional life traces some of its most important elements to the cabin of the placer-miner. Indeed, we may fitly call this the only original contribution of the frontiersmen of America to the art of self-government. Sevier and his Tennesseans did indeed organize their temporary State of Frankland, but it soon and wisely accepted the inevitable. Boone and his brave companions, Kit Carson, Sublette, and his trappers and fellow-guides, Bent, Bridger, Beckwourth, St. Vrain, and their "mountain-men," the companies of voyageurs, the bands of fearless explorers of half a century ago, one and all melted away before the westward-hastening tides of civilization without being forced by imperious necessity to the creation of any code of local laws, or to the organization of any system of permanent legislation. The institutions of the older communities already grown into States, had followed too fast in the footsteps of these pioneers. But that army of State-builders who poured out their mighty toil upon the placer mines of the Far West thirty-six years ago, had no sooner pitched their tents beneath the Sierra snow peaks, than they called meetings of "all the freemen of the camp," created mining "districts," elected officers, clothed them with sufficient authority, and ordained laws under which peace was secured and prosperity reigned for years.

The purposes to which this "Study" is devoted are narrow and definite. We are necessarily compelled to an entire neglect of the curious historical development of the modern "Mining Camp" and its prototypes in ages past; we cannot enter upon a discussion of the various modifications of the simplest form of a Camp, ruled by the direct will of its members; with the entire criminal code, and with much of the civil code of the larger Districts, we have nothing whatever to do. It is simply the regulation of the use of land, under circumstances of peculiar difficulty, by laws mutually agreed upon, and in many cases merely verbal, that forms the subject of this investigation. Everywhere we shall find a return to primitive ideas; use is made the proof of ownership, and equality in regard to the size of the various lots is considered of prime importance.[1]

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[1] Mr. Henry George, in his "Progress and Poverty," Book VII, Chapter V, has some interesting remarks upon this point.

We shall also discover that the legislative enactments of the Mining Camp cluster with peculiar force about this central question of land tenure. Outside of each mining district for miles extended the unsurveyed government land, like the *Folkland* of the early English. Within the District itself the territory not in actual possession of some miner was in a state analogous to the *common lands* of the village communities, and, although there was seldom any definite statement of the control of the citizens of the camp over this unused territory, yet, as a matter of fact, such control was often and successfully asserted, even to the extent of taking possession of and selling for cash all the unoccupied lots in the village. It will easily be seen that under such circumstances, extending over a number of years, a large body of laws was created, setting forth with great exactness the relations of the miner and his land claim. First, the legal size of a "claim" was determined, then the requirements of legal ownership, next, the conditions whose constant fulfilment was necessary, and the circumstances which would work the forfeiture of all right and title, and, lastly, the methods of procedure according to which disputes were to be settled.

The limit of time covered by the present investigation is the thirty-six years since 1848, for important organizations of Mining-Camps differing in few particulars from those of the "flush era," have taken place within the past few months. Geographically, the field under consideration extends over the mineral belts of the Sierra Nevada and the Rocky Mountains, and includes the scattered camps that lie between. It goes as far south as the districts of the Chiricahuas and Southern New Mexico; as far north as the sources of the Fraser and Saskatchewan. As regards numbers, there were in 1866 over 500 organized districts in California, 200 in Nevada, and 100 each in Arizona, Idaho, and Oregon, or a total of 1,000 small communities, each with its local laws. Since then, the number of districts has diminished in the older mining regions, and has increased in the newer ones. State and national legislation has in a great degree obviated the necessity for District law, except upon the frontier, but there the Mining Camp ideas still flourish.

The only way in which the land system of the miners can be clearly understood is by a minute analysis and close comparison of the land laws and consequent regulations of a large number of districts. We have obtained from various sources copies of the laws actually enforced for a long period of years in many of the leading camps of various States and territories, sometimes, of necessity, abbreviating their enactments, but omitting nothing essential to a full and fair understanding of the subject. A volume of two thousand pages would hardly be sufficient to contain the complete laws of all the Mining Districts of the Far West. These laws in their complete form are usually concise, well-worded, and clear in meaning; in some cases they were evidently drawn up by lawyers, in other cases by men of good general education, but totally ignorant of law-phrases, and in a third class of cases they are the work of ignorant but practical and much-in-earnest frontiersmen. By far the greater number of districts to whose laws we shall call attention are Californian, because in that State all the essential features of the system were first developed.

The first district to which we shall ask the attention of our readers was situated five miles from Sonora, the county-seat of Tuolumne County, California,[1] and was in one of the richest gold-bearing ravines known to the pioneers of 1848 and 1849. Many nuggets of large size were taken out, and fortunes were made in a few days or hours. The homely appellation of "Jackass Gulch" was given to this district upon its first organization in the autumn of 1848. For a time it was one of the most "booming" places in the mountains, and hundreds of ardent gold seekers dwelt there. Verbal laws, agreed upon at a mass-meeting, ordained that the size of a claim should be ten feet square, as in many cases a plot of that size had yielded ten thousand dollars before being exhausted of its precious mineral, and upon that basis of allotment there was enough mining land for all the workers to obtain claims. Written laws were soon needed, and, so soon as the richest spots were exhausted, the size of the claim allowed was by common consent enlarged. In 1851, the Camp Laws, as adopted and enforced were as follows:

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[1] Our authorities for the Tuolumne Camps are in the first place, a very rare pamphlet, "Heckendorf & Wilson's Miners' Directory of Tuolumne County," Sonora, 1856; secondly, the testimony of some ten or twelve of the pioneers of that region, with whom we have corresponded; thirdly, extracts from the early Tuolumne papers, advertisements, notices of meetings, &c.

First. That each person can hold "one claim by virtue of occupation," but it "must not exceed one hundred feet square."

Second. That a claim or claims if held by *purchase* "must be under a bill of sale, and certified by two disinterested persons as to the genuineness of signature and of the consideration."

Third. That "a jury of five persons shall decide any question arising under the previous article."

Fourth. That notices of claims must be posted upon the ground chosen, and must be renewed every ten days "until water to work the said claims can be had."

Fifth. That as soon as there is a sufficiency of water for working a claim "five days absence" from said claim "except in case of sickness, accident or reasonable excuse" shall forfeit the property.

Sixth. "That these rules shall extend over Jackass and Soldier gulches and their tributaries."

The greatly lessened value of the mining ground in this camp is shown by the increased allotment. The requirement of claim-notice renewals during the idle season, when there was no water obtainable for washing the auriferous gravel was common in most of the camps unless a miner lived upon his claim. In more northern camps the winter, not the summer, was the season when claims lay unworked.

In all the Mining Camps the duly accepted "claim-notice" must be "good and sufficient," but if it was dated, signed, and contained the clause "in accordance with the laws of this district," it was a legal notice. Some camps required it to be "written with ink," others "painted on wood or other durable substance;" some prescribed that the "claim stakes," one at each corner of the claim, should be "four feet high and five inches square," and that at least two of them should bear "legal notices." The following examples of peculiar and amusing notices that, although legally deficient, were accepted in their time, have been furnished me by pioneers:

"*Clame Notise:* Jim Brown of Missoury takes this ground jumpers will be Shot according to the Laws of the Timbuctoo District."

Another equally sanguinary one, although not such an unconscious slander on the district laws was couched in these terms:

"*Notis*—to all and everybody. This is my claim, fifty feet on the gulch, Cordin to Clear Creek District Law, backed up by shotgun amendments."
(Signed) "Thomas Hall."

Here are a few others:

"*Notice.*—Our claims, in this district, according to regulations."
(Signed) "Phil. Maxey."
"Jo. Hoden."

"*Taken.*—This is my Honest Claim of ten feet each way."
(Signed) "Andrew Pesante."

"*To Miners.*—Look further. Respect my claim stakes driven by the rules of Douglas Bar."
(Name illegible).

A claim notice of a far more definite nature than these primitive types was posted in San Andreas District, Calaveras County, in 1862, and reads as follows:

"*Notice.*—The undersigned claims this ground for mining purposes, known as the Robert McCall claim, being a deep or shaft-claim, and bounded on the northwest by the Gilchrist and Cornwell claim, and on the southeast by the Plug Ugly claim, and he intends to work it according to the laws of the San Andreas Mining-District."
(Signed) William Irvine."
John Showalter, Recorder, August 18."

A Colorado newspaper reports the following as a claim location made in 1883 in one of the Gunnison Districts:

> "The undersigned claims this lede with all its drifts, spurs, angels, sinosities, etc., etc., from this stalk a 100 fete in each direcshun, the same being a silver-bearing load, and warning is hereby given to awl persons to keepe away at their peril. Any person found trespassing on this claim will be persecuted to the full extent of the law. This is no monky tale butt I will assert my rites at the pint of the sicks shuter if legally Necessary so taik head and good warnin. Accordin to law I post This Notis.—John Searle."

Returning to the "laws of the camps," we remark that a great number of variations upon minor points appear. The "Right to purchase other claims" allowed by Jackass Gulch was denied in many other districts. The mode of settling land disputes, also, differed much, even in contiguous districts, but arbitration was a favorite system. Springfield District, whose leaders were men from New England, trained in town-meetings and local self-government, was able to create an organic law far superior to that of Jackass Gulch, although not more than ten miles distant. We have no record, nor reliable tradition of the first year of the camp except that "it was orderly." But they adopted laws in written form at "a mass-meeting of the miners April 13, 1852," and this Code was revised August 11 of that year, and again December 22, 1854.

After describing the boundaries of the district with unusual minuteness, the Preamble (of April, 1852) proceeds to declare: "That California is and shall be governed by American principles." . . . "And as Congress has made no rules and regulations for the government of the Mining Districts of the same, and as the State Legislature of California has provided by statute and accorded to the miners of the United States the right of making all laws, rules and regulations that do not conflict with the constitution and laws of California, '*in all actions respecting mining claims*,' therefore we, the miners of Springfield District, do ordain and establish the following Rules and Regulations."

Immediately following are sixteen long and precise articles referring to land rights and the settlement of disputes. The size of the claim is fixed at one hundred feet square, no person, under any circumstances, to hold more than one such claim. Upon this claim work must be performed at least one day out of three, during the entire season for mining. Each claim must have good and substantial stakes at each corner, and "must be registered and described in the book of the precinct registry," to which the owner or owners shall sign their names. Several persons, each owning one claim, may concentrate their labor upon any one claim if they deem it advantageous.

Disputes are to be referred to a Standing Committee of five miners, or to any member or members of this committee, as "arbitrators," or a "miners-jury" may be summoned. "Each member of the Standing Committee shall in each case be paid two dollars for his service." It is easy to see that in many cases one arbitrator could decide a case as easily as could five, and at much less expense. The laws proceed to further define the process of arbitration. The head of a committee is to be sworn in by a justice of the peace, "provided such an officer be appointed in this mining district," and is to administer the oath to his associates, and to the witnesses. This oath was of the form: "You swear, (or affirm) to honestly and truly arbitrate without fear or favor, between the parties in all disputes that come before you for decision." It is also declared that the verdict arrived at, whether by jury trial or by arbitration, must be received as "conclusive and binding upon the parties thereto and be deemed and considered final in all such cases." Either party may compel the other to come to trial by full board of arbitration by giving him three days' notice of time and place. Costs shall be paid in the same way as in Magistrates' Courts. Disputes over water privileges are especially named for arbitration.

The desertion of a claim for thirty days during the working season, of six or eight months, resulted in "forfeiture without remedy," and if the claim was a valuable one, some watchful person would probably take legal possession at exactly one minute past midnight on the morning of the thirty-first day. Such cases occurred very often in the mines.

Article thirteen of this Springfield District Code reads as follows:

"No person not an American citizen, or where there is any reasonable doubt of his being entitled to the privileges of an American citizen, shall be competent to act on any arbitration or trial by jury."

The next article provides that "companies which go to great expense in running tunnels" are allowed "two claims for each member of the company." The first code of "Tunnel-Claim laws" adopted in this region was several years later, January 10th, 1855, and it then defined a legal tunnel claim as "one hundred feet along the base, and running from base to base through the mountain."

Article fifteen provides for the election of a district recorder "who is to have fifty cents for recording the title of each mining claim."

The last article provides that "all claims held by foreigners who have failed to secure their State license" shall be forfeited. This was a provision intended to aid in the enforcement of the State Act of April 13th, 1850, imposing a tax of twenty dollars per month upon all foreign miners.

Jamestown District, a few miles from Springfield, contained a large number of Southerners and Western Men. It was an orderly and well-managed community, ruled by "Miners' Meetings" convened once in six months, with an occasional "special meeting." In 1853, "several persons having attempted to pass unpopular laws," the miners held a rousing assembly, repealed "all previous laws of every sort whatever," enlarged the bounds of their district so as to include a number of outlying claims, adopted the usual standard size of one hundred feet square "in place of the previous and varying regulations," and declared that "all claims secured under former laws" were publicly acknowledged as legal.

Within three days after the time of location a claim must have a ditch one foot wide and one foot deep cut about it; notices must also be posted, and stakes driven at the corners. Failure to work a claim within six days after the mining season begins, causes forfeiture. A miner can hold other claims only upon proof of purchase. Miners shall have the use of water from the ditches "according to the date and situation of the location of their claims."

An important and very significant clause, is to the effect that "miners may dig up any farm, or enter within any enclosure," by giving the owner security "that they will pay all damages inflicted." In no case, however, shall they dig "within twelve feet of a building, or obstruct the entrance." Mining was held to be the paramount industry, and the miner's possessory claim outranked that of the agriculturist. Payment of damages meant only that growing crops and improvements should be compensated for if destroyed.

When this camp was first established, in August, 1848, its wealth was so abundant that a trader sold a handful of glass beads to an Indian for about $6,000 in gold-dust; and for some time in this and adjacent camps men wandered over the hill-slopes plucking up tufts of the coarse "bunch-grass" and shaking off the soil in buckets, often thus uncovering rich "pockets." The same thing was done in Australia and Brazil in the early days of the "placers" and the "dry diggings." The irregularity with which gold is distributed, even in rich districts, makes the dignity and minute enforcement of the camp land laws all the more remarkable as a triumph of the Anglo-Saxon capacity for self-rule. Hundreds and thousands of times, in camp after camp, "ill-luck" seemed to follow one miner, while "good-luck" was another's constant attendant. One old pioneer writes me from Idaho, after a quarter of a century spent in placer camps, that he has "tossed up" with a miner for choice of ground, the two having arrived on the spot at the same time, and has chosen the upper claim, and "failed to make wages," while the other man "took out five thousand dollars from a space twenty feet square and four or five feet deep." Of course there was claim jumping at times. All laws are occasionally broken by unruly members of the community, but an impartial historian of the Mining Camps is forced to declare that these infringements of individual rights were in most cases punished with terrible severity by the citizens. The famous "Holden Garden Claim" fight, near Sonora, Tuolumne County, about 1852, is a case in point. A very rich ledge of gold-bearing quartz having been found by some gardeners in their "cabbage patch," was "staked out" by them, and work begun. A party of gamblers in the town started for the place, and attempted to take possession—did in fact hold the ground for a few hours, but the citizens took a hand, drove them off, and restored the property to its rightful owners, after a skirmish, in which one or two men were killed and several wounded.

To return to our synopsis of the special laws of various camps concerning land and land matters. We next take up a small but very active California district, "Shaw's Flat." In this camp there had been much trouble from the attempt of several miners to run the lines of their claims so irregularly as to include more of the good mining ground than they were entitled to. This was an early difficulty in hundreds of camps, human greed and selfishness being distributed with considerable evenness, in camps, as in cities. Men tried to establish the legal idea of a right to forbid others from trespassing on their "claims." This failed utterly; in every camp, without exception, the fact that a prospector had occupied the mouth of a gulch or cañon, gave no right whatever to forbid others from "highway privileges" across his claim. The miners of the Sierra would have laughed to scorn any such right. Pastoral land claimants in the West have often monopolized and controlled thousands of acres of land by the mere location of a "warrant" on a section that contained the springs, or was the gateway of a precipice-guarded valley. But never, in all the mining history of the Pacific Coast and

Rocky Mountain region, did any prospectors succeed in this fraudulent extension of the "possessory right" to use land. "Shaw's Flat," and other districts settled the difficulty, by ordaining "right of way" everywhere; and by insisting upon the "square location," except in a few well-defined situations.

We are speaking, it must be remembered, of placer mines, not quartz-leads, to whose holding a somewhat different law, evolved partly from the placer usages, and partly adopted from the experience of other races, was applied. Quartz-ledges in the United States, follow this oblique location theory; the ledge itself is the property and may be followed to any depth. In Mexico, the square location system is the one adopted for quartz-mines as well as for placers. The true placer claim is so much surface, and to bed-rock, or beyond as far as crevices that may contain gold can be found to extend. We find, therefore the usual clause "in one lot, and square in form," which prevents the prospector from conforming his claim to the outline of the gulch. Sometimes, when the width of the stream is uniform and the sides of the ravine nearly parallel, the clause reads: "shall be uniform in width, and extend from bluff to bluff," or, "shall run across the width of the gulch." So narrow and deep are most of the wild mountain gorges in which the miners toiled, that it appears likely that the typical camp was of this latter form—a long line of men extended for several miles up and down the ravine, and returning at night across each other's claims, to the little collection of tents and cabins, saloons and hotels, and motley adventurers, that was the "Camp," the district town, the temporary metropolis, perhaps, of half a dozen surrounding camps, but doomed to sudden downfall the moment the gulch was "mined out," or even long before, if a richer place was discovered elsewhere.

At "Shaw's Flat," a "legal claim notice" was sufficient to hold a placer 40 feet square, for ten days after work was begun in the district, counting from midnight. "Part of a company" could not presume to "hold the claims of a whole company during the absence of any of its members." There were to be no non-resident stockholders, no taking up of claims in the name of distant friends and relatives. If a man left a district for the working season he must sell his claim to some one who would utilize it. The "Camp law" held that a "company" was but an association of men whose capital was their own work, and who found that their claims could be handled better thus. The development of this idea in a few years, in the mines, to a point when associated capital constructed some of the most remarkable of engineering works, and brought water for hydraulic purposes, ten, twenty and forty miles over the most broken and difficult of regions, would of itself form a fine theme for an extended essay, but the subject is foreign to our present purpose; we have only to deal with the primitive forms of the "company" idea in the mines, and in most of these no truly associative and representative element was recognized as inherent in a "company." Some interesting exceptions, however, have been noted, and we shall call attention to others in the course of this investigation.

The laws of "Shaw's Flat" proceed, further, to provide that all "deep diggings," where "pay-dirt" is 25 feet from the surface can be "laid over without work from December 1st, to May 1st, if they are only well defined by marks and stakes, so that no difficulty need arise," and also "are recorded in the district register which shall always be open to inspection." The point involved here is the desirability of giving constant employment to every citizen of the district; "surface," or "flat," or "river," or "bar" claims were worked when water was abundant; deep claims were "drifted," and the "pay-dirt" carried down to the streams or springs, and then washed out, for which there was sufficient water even in summer. Sometimes they could be worked in winter too, but no one wished to do that; for he wanted some occupation when the water ran low in the channels, and the rockers could no longer be swung. In this district the annual meeting was attended "by all claim owners" unless they made "a reasonable excuse." This reminds one of the seventeenth century local laws of New England towns. In Farmington, Connecticut, for instance, whose old town records, the writer had occasion to study the last summer, it was ordained two centuries ago, and more, that whosoever failed to attend the annual town-meeting on him a "fine of twelve pence" should be laid, no light matter in those days. And in the ten or twelve California districts, of 1849-54, wherein we discover special clauses intended to strongly enforce the duty of each and every miner to attend the annual and semi-annual meeting, the New England influence is apparent, the names of prominent men in each camp are New England names, or in some phrase of the enactment itself, the link is clearly shown. For instance, there is a forgotten camp near Piety Hill, Shasta County, long ago swept from existence, not a house, or cabin, or tent pole, or wheelbarrow, left to mark the spot, only vast gravel mounds, vast heaps of hand-piled bowlders, vast cuts in red clay, now overgrown with pines. Here the "Camp" had a "committee man," the head of a committee of five, to settle disputes, record claims, and preside over special meetings.

Four small districts of 1850, "Saw Mill Flat," "Brown's Flat," "Mormon Gulch" and "Tuttletown" had laws that were much alike, and at one time there was talk of uniting them into a "confederacy," together with several adjacent camps, all in Tuolumne County. That is to say, tradition and the memory of old settlers, reports that the scheme went so far that delegates met, and talked the subject over. They reported, "There's no money in the plan; if we wanted to dig a ditch in common we could easily unite for that, but our laws are sufficiently uniform to prevent annoyance." Two of these districts begin their laws with: "Whereas this district is deficient in mining laws and regulations, and disputes have arisen, therefore we, the miners of ——— District, in convention assembled, do pledge ourselves to abide by the following laws." "New diggings" in the vicinity of an established camp, are always much desired, so we find here as in some instances previously noted, that the discoverer of such is rewarded with a double claim. The Carthagenians used to build temples to those who found new mines, and paid them honors after death, but the rightfulness of giving to such a double share in the mining ground, was not recognized, so far as we can discover, until men of our Germanic race began to organize into mining communities. Some few of the California Camps felt that a treble share of the gold-streak was none too much for the discoverer, and one instance of a larger allotment has fallen under my observation, that of "Poverty Hill," where four times the usual claim was allowed.

"Saw Mill Flat" when first organized, about 1850, provided for a committee of three persons, chosen by the miners in general assembly, to "see that the laws are obeyed," and to "call meetings of the miners of this precinct to enforce the laws, or whenever for any reason they deem such a meeting necessary." The arrangements made for "arbitration" in this district were minute and definite. "Whenever any dispute shall arise respecting claims or water privileges each party shall choose two disinterested persons, the four thus selected shall choose a fifth, and the five thus selected shall then hear evidence, according to the laws of the precinct. The law of "Brown's Flat" ordains that these five arbitrators, instead of being chosen by the disputants in the above manner, shall simply be "appointed, whenever needed, by the committee" of three duly elected persons who ruled the Camp. And they were especially enjoined to "view all disputed territory," and to "summon and examine witnesses" when necessary. This "Brown's Flat" committee was chosen in public meetings "to hold office until superseded." Its powers and privileges were about the same as at Saw Mill Flat. Sometimes the arbitrators failed to give satisfaction in these camps, or found the case on which they were called to act so difficult or obscure, that they retired promptly. What then? In less highly organized camps, still governed by successive impulses of popular will, a meeting would be called, and the case stated, *pro* and *con*, to the assembled claim owners; but camps where "committees" ruled made these committees the "Courts of Appeal," and if arbitrators retired, or if their decision was disputed, the "Committee of the Camp" was called upon. No case of a still further appeal to the State or County Courts, then in existence, can be obtained. The final decision came from the camp authorities. Nor were these decisions matters of small account, for property worth several thousand dollars was often involved, and its ownership was settled in one afternoon's visit from the arbitrators; to such an informal affair had the administration of justice been reduced.

The Tuttle-town laws say that "no person shall ever hold more than two claims in this district, either by purchase or otherwise;" again, an admission of the plan of having separate claims for summer and winter. They also provide, with much circumlocution and elaborateness of detail, for the marking of each claim, and ordain that "any one who destroys a notice or claim stake shall be fined not less than five dollars nor more than fifty dollars." To this some of the northern camps added, "and upon a repetition of the offence, shall be requested to leave the district;" of course, in that case, forfeiting his claim. Tuttle-town required that written notices of claim locations should not only be placed on the ground itself, but must also be posted "in some convenient and public place in the district." This place in nearly every case was the door of the "leading saloon" of the town, or the trunk of some large tree in front of that building. In "Hay Fork," Trinity County, in 1879, also in "Middletown," in the same county, and in "Ophir," Placer County, in 1881, the writer saw "notices" of placer and of quartz locations posted in this manner, signed by the deputy of the County Recorder, and "in accordance with the customs of this district." A common way of putting up a claim notice is to burn it with a red-hot iron upon a slab of pine or cedar, preferably the latter, and if this be then nailed with blacksmith-wrought nails to a tree, it withstands many seasons of sun and storm. Such "claim writs" yet remain in some of the California cañons; saloons where hundreds congregated have mouldered into dust, and over the rude chimneys of miners' cabins, blackberry and clematis vines tangle, pink wild roses and scarlet mimulus blossoms glow; while the scorched bit of cedar shingle is the most conspicuous evidence of the stormy past, when this wild ravine, now a solitude, held a frontier settlement of perhaps a thousand able-bodied miners, who partitioned out every foot of its soil.

Three other districts of which we have obtained copies of the early laws made by pioneers were "Poverty Hill," "Chili Gulch" and "Yorktown," all of them organized early in that "golden prime of Forty-Nine," of which the mining ballads of the Far West speak with such rapture. If it were part of our present task to deal with the general institutional relations, history and literature of mining camps, the little group of a dozen such settlements in Central Tuolumne would afford materials for many chapters. Here, within a radius of ten miles, were camps differing from each other in many important respects, as regarded civil code, criminal code, character of population, and form of government. It is easy to believe that if State life had been delayed but a few more years, if territorial forms had prevailed for a time over the broad California gold fields, these highly vitalized communities would have crystalized into much more permanent units. Even as it was, the uncertainty of mining life, the sudden downfall of flourishing camps, was the cause, far more than State organization, which prevented the growth of permanent geographical and political divisions other than townships, within the county. "Tuttletown," and "Brown's Flat," as we have seen, had their "committee rule," but "Chili Gulch," "Yorktown" and "Poverty Hill," went to old Spanish and Mexican law, and gave obedience to elected Alcaldes, whose rule was almost absolute, and from whose decisions there was no appeal except by revolution. Here were camps with but a ridge of quartz-ribbed, pine-crested hills between—and while some looked to New England and the depths of the Odenwald and the Black Forest for the source of their scheme for settling land disputes, others, equally well governed, looked to sources Castilian, Moorish and Arabian. Yet it is a matter of history that Americans ruled in all alike, though adopting different methods, governing "Chili Gulch" as fully as "Tuttletown."

The laws of "Poverty Hill" limited deep diggings to claims of thirty feet square on new ground, and of fifty feet on ground which had been once worked. A claim must be occupied and fairly opened for mining operations within three days after posting the notice, and absence from the claim for a period of ten days during the working season "throws it open to re-location as an abandoned claim." This camp was "named by contrary," for it was a remarkably rich gulch, and its "claims" were seldom or never forfeited by the fortunate possessors. The practical working of Mining Camp land laws in reference to the forfeiture of "claims" can easily be understood. They were rude tests of judgment and perseverance. Claims that afterwards proved the most valuable on a stream were often located, abandoned, relocated and again abandoned, before any one came along who had the "sand," to use a peculiar Westernism implying "grit," and who staid by his work until "bed rock," and a rich reward were reached. Good and successful miners have told me that their rule was to try every abandoned claim and follow their own individual opinion about the "prospect," regardless of the fact that the expired "notices" of a dozen former owners might be scattered over it.

Two other districts that presented interesting features were "Gold Springs" and "Chinese Camp." The former "earnestly recommended arbitrators," but did not consider them "essential," as a camp jury "might be called." It required all miners to pay strict regard to the condition of roads in the district, also to horse-back trails, accustomed foot-paths, and "not to destroy them in mining operations" without replacing the same by new ones. In other words, if the people of the district were using a path, or street, or roadway across a miner's claim, he must not undermine or destroy it without preparing another on the hillside, or in some convenient way around the place of operations. This principle, also, forms an extensive subject for legislation in the early camps, and takes varied forms. The difficulty was to enforce it; men would wash a road-bed into the creek, and then protest that they had not made a cent, and perhaps move out of the district before the Committee or Alcalde could serve a legal notice upon them. Some later camps obviated part of this difficulty by enacting that the new road "should be made ready for use according to public satisfaction, before work was commenced on the claim crossed by the old road." The sites of many of the towns in the mines have been "drifted" from end to end; towns have been moved, and every foot of the soil on which they stood "staked off" and mined; streets have been preempted, and highways used for years have been made "mining property" by the accident of a sudden pick blow or land slip.

"Chinese Camp" allowed its chief officer the munificent reward of three dollars for each decision in a land dispute, and also his mileage of one dollar per mile for the distance from the central point of the camp to the disputed claims and return. There was a time in some of the earliest camps when fees were much higher, amounting in some cases to one ounce of gold dust for each case tried, and even to two ounces, (thirty-two dollars,) but mileage was nowhere adopted until after 1858, and by that time one or two dollars was considered an ample fee in most cases.

There was no more characteristic district in California, than that of Columbia, in Tuolumne, and its complete laws will be found in the Appendix. This district included "Yankee Hill" and several other lesser camps, at first separate, so that it presents an example of union. March 27th, 1850, five New England prospectors, three of them from the woods of Maine, discovered the famous "Kennebec Hill" placer deposits, and within thirteen days there were eight thousand miners in the new camp, saloons, hotels, stores, and all sorts of human parasites of the actual workers of this mushroom city. Fourteen days from the day of discovery a meeting was called "to organise and govern this camp." "Alcalde," "sheriff," "register of claims," were the officers and the fees collected by the latter paid all the expenses of the organization. In 1852, the united district polled more than twelve hundred votes. The laws adopted were enforced and the place was noted for its orderly appearance.

A very interesting feature of district organization is shown in the course sometimes taken when the surface mines began to fail and more water was needed, through "mining ditches." Associated capital constructed these at a later period, but several districts in the southern mines prolonged their existence by the simple process of forming a "work-stock" company in which there were as many shares as the estimated number of day's labor required to construct the needed aqueduct. Then it became a matter of local pride to do one's share, and the several lesser camps along the line of the proposed ditch sent out all the men that could be spared to take part in the work. Details are unfortunately lacking, but the general system was as outlined. In 1855, several hundred miners from Columbia aided in the construction of such a ditch.

Little Montezuma camp kept apart from its neighbors, and allowed each miner to locate "three squares of one hundred feet each," together or separate, as a "surface claim." Its regulation Tunnel Claim was one hundred and fifty feet in width, and of any depth desired. Its "deep sinking" or upland claim was one hundred by three hundred feet; in other words, it differed from the surface claim in only one particular—that the "three squares" must be contiguous. One week was allowed for recording, and three days' work each week was essential to the end of the chapter. The "Recorder" may be at any time deposed "by a two-thirds vote of the resident miners of the district." Curiously enough, he is also "Arbitrator-in-Chief," presiding over the "Arbitration Court" of four members, two chosen by each disputant, and he casts the deciding vote in case of their failure to agree. Fees as recorder, one dollar per entry; as arbitrator, one dollar per case; cost of a decision to two disputants, two dollars and a half apiece, and no more—this in gold-dust, weighed out at the valuation of $16 per ounce. If one of the disputants "backs out," refusing to select his men, or refuses to abide by the decision, the Recorder is empowered by the district to declare and enforce his judgment as final. Of course he can only appeal to public opinion, call a meeting, and ask for endorsement and deputies. But to this complexion matters never came. The Recorder ruled in peace so long as the camp had any existence.

As late as 1856, the thriving "French Camp" district in Stanislaus County provided for three, or five, or seven arbitrators, as the disputants chose, and added this Spartan mandate: "In the event of any parties not acknowledging the decision, then the miners of this district shall meet and compel said party to recognize the umpire's decision."

Sweetland Mining District, Nevada County, was organized in 1850, claims then being thirty feet square, two years later these proved too small, most of the valuable ground being exhausted, and, after many debates, the size of claims was fixed at 80 by 180 feet. It is impossible to ascertain why this particular size was chosen, unless the explanation that one pioneer gives that this was about the equivalent in value of the earlier allotment, be the correct view. This was in 1852, and the next year the miners met and decided, because of local differences and disagreements, to divide the district into three, each of which thereafter made its own laws. North San Juan was one of these districts, and has been famous ever since, for its enormous hydraulic operations. In 1880, the writer spent several weeks along the "San Juan Ridge," visiting the dozen or more small towns where mining was being carried on, and where, although great corporations held most of the valuable ground, much of the old "district law" still survived, and picturesque tales of the past were abundant and realistic in the extreme. The early codes of this region, now only existing in tradition, allowed but one claim to each miner; at a little later period "one claim by right of location," and an unlimited number by purchase. The "notice" must be renewed "every thirty days," unless this necessity is obviated "by the daily presence of the owners or their proper representatives." An expenditure of $500 in prospecting into, or opening up a claim, is counted as possessory work for two years. The quartz laws of this District, and others in Nevada, merged into the county "quartz code" adopted at a general convention of the miners.

The earliest placer claims in Nevada County were ten feet square, a few weeks later they were increased in size to "fifteen feet on the river," although the size soon varied even in adjoining Camps. At "Brush Creek," whose placers yielded over three million dollars, the size allowed was "a square of sixty feet each way." A chapter could easily be devoted to the early history of the famous camps clustered about Grass Valley and Nevada City. The late Benjamin P. Avery, a brilliant, earnest and much-loved man, whose literary powers were late in ripening, and whose life, by reason of its large plans, was pathetically unfinished and uncrowned, wrote a letter, years ago, to the editor of a little Nevada County Directory, giving a graphic account of the early history of that famous network of camps. It was in October, 1850, that he started from Mormon Island, now Sacramento County, on a prospecting tour to Redding Springs, now Shasta City, and several hundred miles distant. He "rode a little white mule; pork, beans, hard bread, and blankets packed behind." Hearing of "pound diggings," or those yielding some $200 per day, he changed his course to Gold Run. At that time Caldwell's Upper Store, now Nevada City, flapped its canvas sides, and protected, to the best of its ability, a slender stock of dollar-a-drink whiskey, and dollar-a-pound flour and biscuits. Down on the flat were a few tents, and the bars were being worked with dug-out cradles and wire and rawhide hoppers. Pork was $2 a pound and boots cost $80 or $90 a pair. Mr. Avery found good diggings, and returned for his companions, but when they arrived the entire gulch was "occupied by long-haired Missourians, who had staked out their thirty-foot claims, and were taking out their piles. At night many a long-tom party took a quart tin pail full of gold to their cabins."

Those were the times when it cost two dollars and a half to have a letter carried from Sacramento to the camps, when Mrs. Stamps, the wife of the first elected Alcalde of the region, and her sister, were the only ladies in the county, and when lawlessness was quickly suppressed, and the steady increase of social and protective organization was everywhere manifest. The first Alcalde of Nevada City was elected by a voting population of 250, but in many camps ten or a dozen men chose this peculiar and all-powerful officer, giving him all the powers, granted under the Mexican and early Spanish system. He became the judge of the village, the petty lord of the tented town, and only the voice of the people could bring his powers to an end.

The flush mining camps have often been described, with their curious Sabbath-day mingling of ministers, gamblers, auctioneers, dog fights, and street sales, all concentrating about the gorgeous saloons, where monte, faro, roulette, poker, vingt-et-un, and other games of chance were in full blast. There were Indians, Mexicans, Chilians, Hawaiians, Asiatics, Europeans, Yankees, Westerners, Southerners, men fresh from their claims, still begrimed with auriferous mud; men dressed in the latest fashions of Paris, each one of them all measured in that virile, sinewy community for exactly his worth of manhood. But tales of daily life in the camps are not so frequent.

There is a story told about Main street, in Nevada City, California. In 1851, some miners began to sink a shaft in the middle of the street, and in the most important business centre of the town. Expostulations, long continued, were of no avail. "Miners' rights come first," the intruders said, "and there is no law 'gainst diggin' in the street, an' we mean to dig." The storekeeper whose property was most in peril went into his store and returned with a loaded and cocked revolver, which he pointed grimly at the miners, already neck-deep in their shaft.

"Then I'll make a law," he cried. "Just you boys go back, and hunt up a rich gulch. No gold here; plenty of lead."

"That's good law, Judge," responded the leader. "Better'n the average Supreme Court decision. Boys, let's fill up the hole, and start for Last Chance, or Timbuctoo." A later tradition reports that the party "struck it rich" a month later, and sent a nugget in remembrance to the irate citizen who drove them from Main street.

Gold Flat, also in Nevada County; was rather a typical camp. In August, 1850, only two cabins were on the ravine; in July, 1851, over 300 miners were living there; in 1852, it was "played out" and abandoned. Moore's Flat discovered in 1851, held 500 miners before the close of the year. Orleans Flat within a year after its settlement boasted of several hotels and a voting population of 600. Grass Valley itself, which in October, 1850, had but fifteen cabins in sight, was multiplied more than tenfold within five months, and in five years had a population of over 3,500. Little York, prospected in 1849, had its "flush times" in 1852, when "pay dirt" that "ran a dollar to the pan" was discovered. The miners met, laid out a street, declared it sacred to town purposes, and ordained that each claim owner should be entitled to a building lot in the town. Washington Camp, settled late in 1849, contained 1,000 miners by August, 1850, and before January, 1851, there were more than 3,000 miners in that region, governed by laws of their own devising, and divided into several districts.

Rough-and-Ready, another celebrated mining camp, had most of its auriferous gravel claimed by two "companies" who discovered the placer, organized, and tried to exercise rights over a large tract. They sent to the Atlantic States to hire workmen, under contract for a year. Long before these men arrived, hundreds of "prospectors" had calmly and peaceably taken possession, and divided up the gravel beds according to its usual camp regulations. Without a shot being fired, the entire monopoly scheme vanished into thin air, and the twenty original discoverers considered themselves lucky to be allowed to hold claims of the same size as those of later arrivals. At a little later period in this camp, the process of consolidation of claims began with great energy, and about thirty "companies" were thus formed to work the deeper deposits. One of these "associations" of ten persons took out $400,000, in two seasons, from their ten claims, worked as one.

Among other early Camps of Nevada County whose land laws were strict, and well enforced, were Keno, Boulder Bar, Brass Wire Bar, Lizard Flat and Poorman's Creek. The entire gold product of the Nevada Basin, which surrounds Grass Valley, during this era was not less than $30,000,000, and every dollar of it was taken from claims whose possession was regulated by camp law and public opinion, and by no outside force whatever.

Coke's "Ride over the Rocky Mountains" (London, 1852), contains some good illustrations of early district law. In the Mariposa Mines, which the author visited, the local enactments made the size of the claim thirty by one hundred feet, and claims of this size changed hands frequently, as high as $2,000 being sometimes paid for one such "possessory right." "Societies" had been organized in several cases to work mineral ground in common, and a number of quartz mines were in operation. The camps were orderly and well-governed.

Another English observer[1] gives a vivid description of life in the mining regions. He speaks of "Murderer's Bar," the swift river, the black, obstructing rocks, the village-tents of sun-bleached drilling, the miners waist deep toiling to turn the course of the river, others in pits, digging to bed rock, some alone, some in companies; all life, vigor and determination. He says: "Every digging has its fixed rules and by-laws. All disputes are submitted to a jury of resident miners. In certain cases twenty men or so from one camp are met by a number from another camp." He goes on to say that disputes sometimes arose, and even demonstrations with firearms, but that good sense always prevailed. To this endorsement, he adds: "I have had my placer claim of ten feet square encroached on, I appealed to the crowd, and a committee of three being at once chosen, measured it from my stake, and being found correct, the jumper was ordered to confine himself to his own territory, which he always did."

The number of mining districts which organized at an early day, under definite regulations and arbitrators or committees for settling disputes, was very great. There were Jackson, Sutter Creek, and Volcano, in Amador; Placerville, Mud Springs, (which as late as 1863 had provisions for arbitrators) Georgetown and others in El Dorado, Cherokee, Nimshew, Hungarian Hill, and others in the Northern Mines. Bangor, in Butte County, allowed one hundred feet in width, "from rim to rim" of the deposit (1862). Forbestown, in the same county, allowed ravine claims one hundred feet wide, extending across the gulch, and required two days of work per month (1863). An adjoining District only allowed claims of half this size.

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[1] Mr. Frank Marryat: "Mountains and Molehills." London, 1855. (Illustrated with great vivacity by most amusing sketches of Mr. Marryat.)

Copper Cañon District in Calaveras County, organized in 1860, required claim stakes at each end and claim notices renewed yearly; one day's work each month; visit from the recorder and registry essential to perfect title; arbitration a law of the camp. Another Calaveras Camp, "Pilot Hill," after passing through the earlier stages of small plots of land, settled upon fifty feet by one hundred and fifty feet as the proper size for "gulch claims;" two hundred by one hundred feet for "surface claims;" and for "each tunnel or shaft claim," one hundred feet in frontage, extending through the hill. Upon the last class of claims work to the value of $25 per week, as decided by the personal inspection of the Recorder, must be accomplished by each company. "Occupation and use" is sufficient to give possessory rights to the other classes of claims.

New Kanaka Camp, Tuolumne County, affords another instance of a personal inspection by the recorder of the work done, to see if it were sufficient in quantity and quality. There can be no doubt of the weakness of many camp regulations in this respect. The practical safety in thriving camps was that non-compliance with the laws might end in the entry of a claim jumper with the plea: "Forfeited, and open to pre-emption."

In some small camps near Pilot Hill the practice was to mark claims not merely by "notices," but also by stamped tin tags, put on by the recorder "in the presence of witnesses," and bearing the owner's name and the date of his pre-emption.

The Brown's Valley Camp, a busy settlement in Yuba County, now chiefly an agricultural and fruit-growing district, presents some unique features in its system. The size of claims, the amount of work to be done, and the general form of government do not differ materially from those of adjacent camps, but on several occasions the miners appear to have had "political struggles," and laws that one party passed when in power were repealed by the other at a later date. In 1853, therefore, the Camp resolved: "That each claim shall be entitled to one vote in the miners' meetings of this district, by the proper owner, or may be represented by a power of attorney from the proper owner." The nature of this power is closely defined, and limited to specific directions on definite subjects of dispute. It is further declared that claims must be forfeited if they fail of representation at the semi-annual meetings. For more than ten years this law was enforced, the only case, so far as I am aware, of such a regulation, and in this case due to causes entirely local.

In addition to the numerous camps of importance, and some degree of permanence, there were a countless number of evanescent camps, too temporary for any particular organization, except the occasional camp convention, or perhaps not even that if all went in an orderly manner. If a few prospectors found a small deposit of mineral they began to work it with but one idea in mind, that of obtaining as much as possible before any one else discovered their new camp. When this happened, the new comers suggested some definite size for claims, and by "mutual consent" and desire to compromise, they soon arrived at some understanding. In this primitive, informal way, many a group of men worked together for several weeks or months, in a mountain gorge, and practically made an even division of the gold there. In several cases on record the first workers laid out unusually large claims to which later groups of miners demurred, and the question was put to vote; thus, in one instance, reducing each of the eight original claims to one-fifth of its former size, but without any objection from the owners, who, even then, retained larger claims than later arrivals were able to secure.

Hundreds of large and small camps such as these which have been described were dotted over the mining counties of California, and the local land laws of hardly two of them agreed in every particular. The title they gave was, however, a complete one, for all practical purposes, and many thousands of dollars were paid for "possessory rights," and the value of such "claims" was adjudicated by State Courts in a multitude of decisions of the highest importance in the complex history of mining jurisprudence. The "local law" became an accepted legal fact, upon which the ownership of placer claims, surface or deep, tunnel rights, water privileges and quartz ledges was absolutely dependent. The local land laws of the camps may therefore be traced through the long contests in the higher courts when witnesses were summoned to give the "common custom and usage" of the district, but no ordinary law report gives these points, and we must depend upon the meagre details in the newspapers of the period. Even from such sources the total mass of materials relating to camp transactions becomes large enough for a volume.

Almost every one of the early mining camps was swept by flames at various times during its existence, and to this fact the paucity of records concerning the exact wording of the first regulations of camps that have since become large and important towns is justly attributed. The wonder is that so many have been preserved in all their details, so that complete examples of all the leading forms of camp government can be found.

The laws which provided for the acquisition and continued possession of quartz lodes, leads, or ledges, were developed from the placer miner regulations, and varied quite as much. Under their protection, however, extensive companies were formed, and costly improvements undertaken, tunnels driven many feet through solid rock, shafts sunk on "quartz-claims," expensive roads constructed and mills of large size, fitted up with the latest machinery, were built, the value of the entire "plant" being dependent upon the local law of the camp or district. In many parts of California the quartz laws remained at this district stage of development until the habit of entering all valuable mines as United States Mineral Land, subject to purchase, and registered in the land-office, gave the local recorders little to do. But in the four important counties of Nevada, Sierra, Tuolumne, and Sacramento the need of more complete organization, and greater uniformity than the district plan afforded was felt at an early period.

The miners of Nevada County assembled in November, 1852, at which time there was a great excitement throughout that region on the subject of quartz mines. They discussed the subject in all its bearings and decided to unify and simplify the codes of the separate districts bearing upon the holding of quartz claims; the desire to promote convenience and to encourage the advent of capital to further develop the mineral resources of the country were given as the urgent reasons for this step. They appointed a committee of practical miners to examine into the various rules and regulations in use elsewhere and report at another meeting. The convention then adjourned until December 20th, when it re-assembled, adopted after full discussion, with some changes of minor importance, the code of quartz laws presented for their approval, giving it jurisdiction over all districts within the county. This code remained in full operation in 1880, and at that time "had never been changed or abrogated," and it still remains as a basis for ownership of all unpatented quartz claims.

Sierra and Sacramento Counties were later in their adoption of a general system, the former in 1855, the latter in 1857. The miners of Tuolumne County assembled in 1858, and organized in the same manner. Similar meetings were held in several other counties. The size of claim allowed under these county codes varied greatly; in Nevada it was "one hundred feet upon the ledge with all dips, spurs, and angles;" in Sierra it was "two hundred feet on the lode with a width of two hundred and fifty feet on each side thereof," or a total width of five hundred feet; in other counties three hundred feet in length was not an uncommon regulation. The requirements in regard to work done, and manner of holding and registering a quartz claim, also varied greatly in different counties, but the codes in this respect were based upon a greater regard for permanence than were the placer-camp local enactments, and they always provided for a full and complete title in the end, subject to no further work tax, and possessing a recognized commercial value everywhere. Advertisements of the time often read: "Requirement work completed; claim perfected according to District Law."

Innumerable instances of separate District quartz laws might be given; the county organization was by no means the rule. Placerville District, Eldorado County, adopted quartz regulations March 21, 1863, providing that each claimant "may hold two hundred feet on the ledge or lode, with all its dips, spurs and angles, and two hundred and fifty feet upon each side thereof." Seven days' work each month is required. In 1866, the number of recorded claims was 186. Mud Springs District in the same county adopted regulations April 7th, 1863, and allowed prospectors to hold 300 feet on the ledge and 300 feet on each side. The claim notice holds it for 20 days; and the recording of the same holds it for 90 days, before the expiration of which time labor to the amount of $250 must be spent upon actual development of the mine. Provisions are made for a board of three arbitrators. The regulations of Georgetown District, same county, adopted December 10th, 1866, allow a claim of 200 feet on the lode, and require the recorder to visit, measure and stake each claim, receiving fifty cents for the service, from each locator thereof. The expenditure of $500 in labor upon a claim shall hold it for two years, without further work.

Meanwhile a large number of important decisions of State Courts between 1851–1865 had shaped the varying local law relative to "claims." "forfeiture," "labor requirements," "ditches," "flumes," "water rights," and similar subjects, into a system of more universal application, and this process of judicial interference was destined to continue. Yet the very existence of the free miners' code had been in danger during the early days of California. When John C. Fremont was State Senator he introduced a bill to establish police regulations throughout the entire mining region, and levy a small ground tax upon all miners. At that time—the winter of 1850–1851—such a measure would have destroyed the individuality of the local institutions just then rapidly developing in the energetic camps of the gold-seekers. A violent opposition to Fremont's plan was at once manifested; the miners never forgot his ill-timed suggestion. The discussion which followed in the Senate was long and excited. Many of the Senators favored a sale of western mineral lands in large tracts to the highest bidders. But it is chiefly to Senators Seward and Benton that the tacit acceptance by the nation of the policy of free mining, is clearly due. They insisted on delay, urging that haste was unnecessary, and ill-suited to the preponderant importance of the subject. A year later the local regulations of the Mining Camps had assumed such satisfactory control that further and further congressional delay appeared amply justified. Meanwhile, in 1851, the Legislature of California made its declaration after investigating the entire subject, accepted the rules and usages of the miners as evidence in all controversies, and yielded up, for a time, a part of its jurisdiction. The refusal of Congress to pass mining laws being accepted as a practical recognition of the principles for which the miners contended, they pushed forward with new zeal their daring explorations, their costly investments in machinery, in water ditches and tunnels, and other needs of their gigantic undertakings.

Placer mining was in its decadence, in most of the Sierra Counties of California, by 1856, but the chief features of district law continued much longer. Claims were so held until 1868 in parts of Lassen, Sierra, Nevada, Placer, Yuba, Butte, Shasta, Trinity, Calaveras, Mariposa, Sacramento, El Dorado, and several other counties, and over a territory several hundred miles in length and thirty or forty miles in width, the true auriferous belt of California. In many, perhaps in all, of the then existing placer camps, these laws were in force so long as "surface diggings" lasted. When the placers were exhausted and deep mining took its place, the nature of the laws was essentially modified, and the distinctive features of the district organization were necessarily modified, in some cases entirely destroyed, long before the General Government passed its first Act relating to these mineral lands (1866). But, throughout the old mining region, wherever "surface claims" still remain, they are worked, or abandoned claims are "taken up" according to old District laws of the region. Quartz claims are still worked and held as simple possessory rights, until it seems desirable to claim and "enter" them under United States Law.

But, as the opportunity for the full enforcement of such laws passed away in California, those laws conquered new territory, and spread over more extensive areas than even that great Sierra Nevada land, furrowed by the channels of ancient pliocene rivers, and sown with flakes and nuggets of the precious metal. Old California miners introduced these "laws of the camp" into Oregon, Nevada, Arizona, Idaho and British Columbia. They sailed up the broad and mysterious Yukon, and, at the present time, are ruling, with firm and equal law, the camps of Alaska. They re-organized the mining districts of New Mexico, where, as long ago as 1830, placers had been mined by the Spaniards and Mexicans, each worker being allowed to claim a circle of ten paces in all directions from his pit, and only a specified amount of work serving to hold the "*labor*," or claim, against rivals.[1] They even organized, under their free mining system, in South America, and the Central American States. Thus the most valuable features of this local land law were widely adopted in frontier society, and still exist in camps of the Rocky Mountains.

This gradual extension over so great a territory was the work of a number of years, greatly accelerated by occasional

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[1] Prince: "History of New Mexico," p. 242.

"stampedes" or "mining excitements," sometimes quartz, sometimes "placer diggings," but always resulting in exploration, and social organization of pioneer communities. It was natural that these prospectors from California should adopt to a great extent the regulations that California experience had shown desirable, with such local modifications as the nature of the locality, the water supply, the richness of the placers, or the character of the ledges seemed to make necessary. After district laws had been for some time in operation in all these new mineral regions, Territorial laws were passed, by legislatures, a majority of whose members were interested in mines, and the force and legality of the local codes were sustained, their more important features adopted and their usefulness much extended. The laws of Virginia City District, Nevada, including the famous Comstock ledge, were adopted at a miners' meeting on September 14th, 1859. "Two hundred feet on the lead," was the size allowed for a quartz claim, and each such claim must receive a name, and be properly recorded within ten days, after which three days of work each month were required to hold it. "Hill and surface claims" might be one hundred feet square, and "ravine and gulch claims" were "not more than one hundred feet wide," and extending "from bank to bank." The laws were quite long and minute, and were to be posted in two conspicuous places in the district, and another copy must be kept in the Recorder's office, subject, as was his "book of claim entry," to inspection whenever desired.

Reese River Mining District, Nevada, had a code adopted in 1864, at which time the district was nearly square, and twenty miles in extent from south to north. Fifty claim owners by signing a written notice of intention, could call a meeting of all the miners to depose the Recorder. That officer had the right to appoint a number of deputies, the district being so large. A special meeting to discuss amendments or changes in the organic law of the district, might be called at any time by a written application signed by twenty-five miners, and fixing a time of meeting at a sufficient interval to permit general attendance. This rule differed from the California custom in many districts, which custom required those who for any reason desired a change in the laws, to summon personally all the miners in the place, so that they might attend if they chose. The full code of this district will be found in the Appendix.

The Territorial Legislature of Idaho, December 26, 1864, adopted a mining code, chiefly made up from previous local enactments in the districts that had been organized, chiefly by miners from California, but to some extent by persons from Colorado and Utah. One of its features was a "fine of not more than $1,000, or imprisonment of not more than ninety days, or both," for destroying claim notices or removing the boundaries to a miner's plot.

The Arizona Statute of 1865 contains 53 sections, some of them very long, and is drawn up with much legal skill and mining experience. It shows to a greater extent than in California, the survival of Mexican usages. Both Arizona and New Mexico exhibit marked traces of this influence. The statute of 1865, confirms and legalizes the previous acts of local districts. It uses the Spanish term "denunciation" of a claim, for the act of "taking it up," or "location," in the American phrase. It provides for placer mines of various sorts, for dry diggings and for quartz. It orders that the Recorder, when he examines a new claim for the purpose of describing and registering it, shall be permitted to take three specimens from different parts of the lode, and shall forward the same to the Territorial capital, to be kept until they are needed for the mineralogical cabinet "of the future University of Arizona." This is a very interesting provision, not found in any of the enactments of other Territories and States, and it would be pleasant to know that the plan had been carried out in Arizona.

The Oregon Statute of about the same time, recognized all the local laws "in relation to mining rights, placer claims and town lots in mining camps;" it declared ditches and mining flumes to be real estate and mortgages of interests in placer mines to be "mortgages of chattels." The county clerk of each county was declared *ex officio* recorder of the mines, and ordered to appoint deputies in the several districts.

Montana, partly under the influence of Idaho enactments, partly under influences from the Mississippi Valley, organized multitudes of thriving camps in the great Helena gold basin. The years 1863, '64, and '65, were the palmy days of Montana placers. Vigilantes were forced to organize in order to save society from being trampled under foot by one of the most remarkable band of desperadoes that the Far West has ever known. No "dime novel" ever contained so thrilling chapters as the plain narrative of the destruction of "Plummer's Road Agents" by silent and secret Vigilantes, in the dead of the winter of 1863–4. The land laws of "Alder Gulch," one of the most famous of Montana Districts, were adopted at a mass-meeting of the miners shortly after the work of the Vigilantes had been accomplished, and protection to life and property secured. These laws appear in the Appendix to serve as an example of the Rocky Mountain camp laws, even as those of Columbia District, California, serve to illustrate the Sierra Camps.

We can still further understand the contradictory regulations of different Districts and Territories by observing how greatly the size of the "location" varied in the year 1866, when Congress began to legislate in regard to these mineral lands. By examination of the various local codes, and the statutes, acts, &c., of the States and Territories wherein mining had become a great industry, we find that in 1866 the size of the location allowed for quartz claims in various places named was as follows: Copperopolis District, California, 150 feet by 250 feet on each side of the vein; Ophir District, California, 100 feet by 100 feet on each side; Hardscrabble District, California, "fifty feet on the ledge for each location," amended to 200 feet soon after; Sierra County, 250 ft. x 250 ft.; Tuolumne County, 150 ft. x 150 ft.; Nevada County, 100 ft. x 200 ft. in total width; Nevada State, 200 ft. x 200 ft.; Idaho, 200 ft. x 100 ft.; Oregon, 300 ft. x 150 ft.; Arizona, 300 feet square. Angel's District, California, had the "square," or Spanish location system, not allowing the owner to follow the "dips, spurs and angles" of his vein of ore, beyond the limits of his claim. The usual Spanish law allowed in 1866 an entry of 200 varas, or 550 feet, each way. The San Antonio District, Nevada, provided that any quartz claim opened to a depth of fifteen feet "forever remains the property of the claimant," and "can never be re-located." Laws of this sort, passed by a few districts, operated injuriously to the progress of the places, driving away numbers of workers and much capital. In addition to these requirements, Nevada required, in 1866, the excavation of 50 cubic feet of rock for each 200 feet of claim, each year. Oregon required $50 in work each year on each claim. Idaho made the work tax $100, which secured perpetual ownership. Arizona demanded a thirty-feet shaft, or a fifty-feet tunnel, to hold a claim for two years. Thirty days of work each year was needed after the expiration of that time. The minor regulations in all these State and Territorial Acts show the respect still paid to District customs and laws. Whenever placers were found, the regulations thereof at once assumed the general form of the early camp codes that we have been considering. As the specimens of laws printed in the Appendix to this pamphlet will sufficiently show, the changes that occurred were all in the line of larger claims, and the demands of capitalists and associations. The confinement of a prospector to one claim in a District fell slowly into disuse, as the prospector became more and more a man who "took up claims" for others as well as for himself.

In 1866, Congressional legislation sanctioned these local laws, whenever "not in conflict with the laws of the United States." The legislation of Congress in subsequent years has continued in the same general lines, has specified with increasing definiteness the accepted modes of locating and holding mining claims, and the manner of obtaining a U. S. patent to mineral lands, always recognizing, however, the essential features of those laws framed in the early California Camps.

The permanent influence of the miners' civil code is further manifest in every portion of the mining law of the United States to-day. The statute of May 10th, 1872, and the "Revised Statutes" assert that mineral lands of the government are "open to exploration, occupation and purchase," under regulations "prescribed by law and according to the local customs of miners in the several mining districts." "Mining claims," it provides, "upon being in quartz or other rock," shall be governed "by the customs, laws and regulations in force at the date of their location." Previous locators are protected, and only ten dollars worth of work per year on each claim is required, whereas on locations made after the passage of the Act, one hundred dollars worth of work is essential. But the influence of local laws is evident throughout. No government title to mineral land can be obtained until the claimant proves "a compliance with the mining rules, regulations and customs of the mining district, state or territory in which the claim lies." When his papers, mining records, certificates of location, claim notices, local recorder's certificate, &c., are accepted by the government land officer, the claimant is allowed to purchase the tract at five dollars per acre for vein or lode claims, and half that sum for placer claims.

Thus, for many years, the process of establishing new camps, and the process of determining by judicial acts and decisions, in courts, legislatures and congress the relative value of those local laws, went on simultaneously, ever evolving from crudeness and seeming contradiction, the higher forms of mining jurisprudence. Everywhere, life and energy, working on a gigantic scale have plowed furrows into the institutional "bed rock" of Western Society; the placer-miner's rude "rocker" hewn from the great sugar-pines of the Sierra, the tall firs of the Cascades, the twisted spruces of the Black Hills, the snow-weighted cedars of Kootenay, have cradled infant Territories, and young, lusty States.

Leaving this past and coming to the actual camp life of the present year, we discover that the region of the United States where the spirit of the earlier system is strongest, is that vast mountain realm which extends north of Nevada, Utah and Colorado.

> "In that desolate land and lone
> Where the Big Horn and Yellowstone
> Roar down their mountain path,"

where it is a wilderness of crags, narrow vales, and high plateaus for hundreds of miles west from the place that saw the heroic death of "the white chief with yellow hair," the "mining-camp" is the beginning of government. To-day, these camps cluster most thickly about that enormous mass of rugged ranges from which the Columbia, Peace, Fraser, Toiyepe, Marias, Madison, Clearwater, Saskatchewan, and dozens of other rivers flow, towards all points of the compass.

Here is probably the last hope for discoveries of wealth-bearing placers of any great extent, and here, last winter and spring, began that exciting "rush" to the Cœur d'Alene region, of which, after a summer of conflicting reports, the the result appears to be somewhat disastrous. The thousands that went thither, however, found gold in many places, and organized temporary camps. One on Pritchard and Eagle Creeks, Shoshone County, adopted its local code concerning claims, during the first week in March of the present year, 1884. The greatest of changes manifest from the common rules of elder camps was in the size of the claims. All locations on lodes of quartz, made so as to conform with the U. S. mining law of 1872, are to be 1,500 feet in length and 600 feet in width. All placer miners are allowed to locate twenty acres, so situated that neither dimension of the tract shall exceed eighty rods. The friendly and socialistic miners of the California Camps of the "Flush Period" have little part in this later development; the capitalist has come to the front, and desires the whole of a quartz lode for his mill, or sufficient placer ground to justify the use of hydraulic methods. This is further shown by section third, which provided that authorized agents for capitalists may locate and record claims for them. Such a thing was never heard of in the early mining days on the Pacific coast, but the professional prospector and locator of claims for others is a prominent figure in western camps. "Give me a grub stake an' I'll locate ye a dozen good mines," is the appeal made to each "tender-foot" as a stranger is affectionately termed. Still another section of this Cœur d'Alene code allows men to take up one claim in each of the separate gulches where mineral is found.

In respect to claim work and assessment, another series of changes from the camps of twenty years ago, is manifest. One hundred dollars worth of work must be done within the first year after location, and twenty dollars worth of work for each month between June and November in subsequent years. Road making and cabin building are allowed to count on the assessment, at the rate of five dollars per day. A claim must be recorded within fifteen days after location, the district being so large that a shorter time-allowance would work hardship in many cases. The laws announced in regard to riparian rights and privileges, are much the same as those of thirty years ago. Miners may unite their claims for the purpose of more convenient working. This, also, is a common expedient. Most interesting of all, we observe that the system of arbitration still prevails. "Each disputant is to be allowed an equal number of arbitrators, and in case of a tie on the decision each arbitrator shall have power to call in an assistant." Twelve miners by ten days' written notice can call a meeting to change the laws of the District. The officers are "chairman" and "claim-recorder." This interesting code appears in the Appendix, and can be compared with those of earlier camps.

The laws of placer and quartz districts in the Saw Tooth Range, along the Salmon, and in the Great Bend of the

Columbia, districts actually organized within the past year, and in existence at the present time, might easily be added to those of the Cœur d'Alene miners, but they present few variations from the types already illustrated at sufficient length, Some of the more general aspects of the subject, however. seem to deserve attention. The outward spread of the camps, from their starting point in California, has been spoken of, and also the crystallization of crude local laws into more general enactments, which process the quotations in the Appendix, from decisions of State Courts, and from legislative acts will more clearly show. But the living force and influence of these local institutions thus created needs further emphasis and illustration, even at the risk of appearing to be "re-working the placer."

Over a period of thirty-six years of ardent and picturesque life the story of these small frontier settlements, called "Mining Districts," can be said to extend. We have seen to some degree the nature of their enactments, based upon the facts that the government allowed entry upon the public mineral lands of the United States, and that until 1866 nothing was done by congress to limit or define that right. Thus, for almost twenty years after the discovery of gold in the California gulches, the seekers for the precious metal were therefore left to their own resources in the matter of district laws. This was a creative opportunity such as the miners of no other race had possessed in modern times. Australian miners found that government officials and tax collectors, assize courts and the machinery of civilized society were at Ballarat, Bendigo and Mount Hope before the ground was fairly prospected. An efficient and satisfactory system was thus extended over the mines, but it was far from being the creation of the miners themselves. In California, on the contrary, so universal was the habit of self-organization, so generally acknowledged were the benefits of the system, that often the first thing that the dwellers at the county seat knew of a gold discovery was the news that a "new district had been formed" and given a name, and that twenty or fifty claims, as the case might be, had been "taken up" the first day.

The curious and typical western character, not as yet quite understood in literature, and sadly caricatured in most cases, is not the claim owner, not the red-shirted miner in the camp —swinging his twelve-pound pick of glittering steel, four feet from tip to tip, the weapon for a Titan. Grand figure, indeed, is the jovial and "well-located" miner, but the true romance of the Far West lingers more with the miners whose claim is exhausted, or has failed to "pan out"; it lingers most of all with the wandering *prospector*, the pioneer of Western civilization who explores gulch after gulch, mountain range after mountain range, and toils across deserts, and poles his canoe up swift torrents, and rides his "*Cayuse*" into regions where Indians and grizzlies dwell, too often leaving his bones to keep guard in the wilderness.[1] But this typical "prospector," wedded to his free-mining customs, carries with him wherever he wanders the spirit of a law-abiding American citizen; and to-day, as of old, the first thought, when he finds a rich gulch and companions gather about him, is "camp-organization."

Another fact clearly evident to students of the institutional development of the Far West is the unusual permanence of the forms thus created. In more than three thousand Districts, many of them since grown into thriving cities, land laws of the nature we have been describing lie at the foundation of their polity. There were not, at any one time more than a thousand camps in existence, but where some perished others took their places, while the living link of camp with camp, district with district, code of the California of 1850 with code of the Montana of 1864, or of the Idaho of 1884, was none other than the wandering prospector, who had helped to make the laws of many such settlements.[1] Although the material at hand for a study of the mining camp land laws is sufficient to reveal their nature and relationship, yet the student of the period is forced at last to vain regret over the loss of the records of so many famous camps, the obscurity of the recollections of so many pioneers. Men who are making history, who are founding States, are not apt to display any zeal in treasuring up the documents which explain their deeds. If a camp were well-governed, what mattered it to the "Argonauts" whether a copy of their proceedings were preserved? Changes, removals, decay of camps, fires in mountain-towns, and a host of disasters have overtaken the crude and plain enactments of hundreds of communities. In general terms it may be said that the "rules and regulations" of nearly a hundred camps on the Pacific Coast or in the Rocky Mountain region, are still preserved in print or in manuscript, and that fragments of evidence concerning the usages of many other camps yet remain, buried in law reports and official documents. But there can be little doubt concerning the real sufficiency of this material. The general nature of camp law appears from the evidence accumulated in the course of this "study," hardly less than if that evidence consisted of tabulated reports from all the camps of the period. In itself the material which can be accumulated is ample, and only when the mass of what has perished is taken into consideration does it seem in anywise inadequate. For further evidence concerning the practical workings of the camp codes in relation to claims, and their use or forfeiture, we must examine the reports of travelers and take the testimony of the pioneers themselves. There is hardly an exception to the opinion that law and order prevailed, that "landed property" on the mining-camp basis was protected, that the attempt to make use the only title-deed was successful in all the early placers.

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[1] "Few know or have ever paused to think how many men have perished in these wild crusades searching after gold in remote localities. Embarking in frail crafts some have suffered shipwreck on their way to or back from Gold Bluff; some, overcome with exposure and fatigue, laid down and died in the gloomy woods of British Columbia. Some were swept to death over the rapids or engulfed in the treacherous eddies of the Fraser. Of the more adventurous not a few battled with Indians on the distant frontiers, while others, vainly struggling, sank under their burdens in the snows of the Sierra or perished from thirst far out on the deserts, where their uncoffined bones lie bleaching to this day." Editorial in "Mining and Scientific Press," San Francisco, January, 1884.

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[1] It is impossible to describe in the space at our disposal, the great "mining excitements" that scattered broadcast the local laws of the early Districts. The following, however, were some of the most famous ones: Gold Lake, "the first stampede," summer of 1850; Gold Bluff, spring of 1851; Kern River, '54–'55, which took 5,000 miners to a region where most of them failed to pay expenses. Fraser River in 1858, took 18,000 men from California, and San Francisco real estate lost from 25 per cent. to 75 per cent. The terrible hardships of these bold explorers did not lessen the force of the Washoe excitement of two years later, when 12 mines on the Comstock paid dividends before 1865, and 2,988 mines did not. In 1869, came the White Pine rush, then the Bodie excitement, then Snake River, and others almost yearly till the last, that of the Cœur d'Alene, near the borders of British America.

But we cannot pursue our subject into these broader fields. The social and intellectual aspects of the Mining Camp, and its relationship to the growth of organized society in the region where for a time it ruled paramount, belong to the book-maker, not to the pamphleteer, for this higher problem is complicated with elements contributed by alien races and different civilizations. The Camp, the Mining District, the commonwealth of freemen settled for a time in close companionship under the lofty snow peaks, breaking each other's bread, and sharing each other's blankets—*this* must be accepted as a potent factor in all the beginnings of social order, over an extent of territory five times the size of France. The roots of its growth lie deep-tangled in the soil of *Lex Saxonum*, and capitularies of Karl the Great; they spring more nearly from New England town-meetings and parish-meetings of the south, and settlers' associations of the west, but unlike the latter their influence has outlasted the conditions which gave them birth.

Of the land laws of these tent dwellers on Mormon Island, these cabin dwellers of Garrote, Cat Camp, Boneyard, Moccasin Creek, Big Humbug, Grizzly Scare, and later California

Districts bearing even more startling names, the least that history will say is that they were able to win recognition in courts of higher jurisprudence, and formed a controlling factor in the creation of American mining law. The Law Reports of California, Arizona, Nevada, Oregon, Colorado, Montana, Utah, Wyoming, and Idaho, bear evidence to this. There is hardly a mining case in all the volumes of these Reports that does not depend more or less upon the "land laws" of the district in which the disputed claims are situated. Rights over a plot of definite size, located according to local law, "staked" or otherwise marked, "registered," held by "work assessments" and never "abandoned;" rights over all running water not otherwise appropriated; rights over quartz ledges, even on the same ground before occupied by placer claimants; superior rights of the mineral seeker over the farmer or herdsman upon public lands — these are some of the "points" of local law that later courts from time to time enforced. A noteworthy example is in the case of the St. Louis Smelting and Refining Co. *vs.* Kemp & Nuttall, on appeal from the U. S. Circuit Court of Colorado, in which the U. S. Supreme Court this year rendered a decision of importance. A "Location" is held to be that quantity of mining ground which one person may legally acquire by location, in one body; a "claim" may embrace a dozen such locations acquired by purchase, provided they are contiguous, and the required annual expenditure may be upon any portion of the claim, or be at a distance from the claim itself, as when the labor is performed for the turning of a stream, or the construction of a flume.[1] In the noted case of Sparrow *vs.* Strong before the Supreme Court in 1865, Chief Justice Chase had said: "We know that the territorial legislature has recognized by statute the validity and binding force of the 'rules, regulations, and customs of the mining districts,' and we cannot shut our eyes to the public history which informs us that under this legislation, and not only without interference from the general government, but under its implied sanction, vast mining interests have grown up." The decisions of the present time show the same respect for vested rights, although the passage in 1866 and 1872 of general laws, relative to the purchase or pre-emption of mineral lands of the United States, has greatly lessened the scope of "district law influence."

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[1] Decision given by Mr. Justice Field. Compare section 2,330 of the Revised Statutes of the United States.

Nevertheless, the permanent place which such local law occupies is shown in the fact that in many cases at the present time men form a district, agree to abide by the United States mineral land laws, make a few minor land regulations, and keep up the district organization for other purposes. Prospectors and temporary holders of claims will always need local enactments to prevent quarrels, and these enactments they will continue to ordain in "miners' meetings" for many years to come. Further than this, the permanent influence of camp laws is clearly manifest in the organic life of such typical California mountain towns as El Dorado, once Hangtown; Nevada City, once Caldwell's Upper Store; Shasta City, once Redding Springs; Downieville, once a group of tents; Sonora, once a half-Mexican village. Each one of these places is now a county seat, and some are towns of several thousand inhabitants, but in most cases their incorporation as towns was done by the "miners of the district," while the mining industry was yet predominant, and their organization of to-day is more simple, more direct, and more dependent upon popular will than are most municipal systems.

So far as California is concerned, the truth remains that, long after the State was divided into counties and townships, the camps, whose usages we have discussed, were flourishing undisturbed under their local laws, and with their local recorders, or other presiding officers. Social, political, and literary elements of primal importance the study of this system reveals. The instinct of the novelist and poet has already seized hold of a few of the more effective and picturesque features of the early camp life and district law, but a broad realm for true word artists is as yet unconquered. As a chapter in political science the place of the full story of these districts will be recognized when the right men, trained in schools of comparative institutional history, come to the writing of the growth and development of communities west of the Mississippi. The student of sociology will say as he investigates the organization of these early camps: "Here are glimpses of Jean Jacques Rousseau, and the 'Social Contract' theory; here is a harmless and altogether new form of socialism; here, for a brief space, all the world was 'lawless' according to strict legal interpretations, but wonderfully blessed with the essence and spirit of true self-government." Because more than a hundred thousand young, able-bodied American citizens, bent their backs to the miner's mighty toil, and for years "went camping," under skies bluer than Italy's, in the torrent-watered cañons of mountains loftier than the Alps; because of their brawny strength, their splendid vitality, their terrible earnestness, the laws they formulated in "miners'-meetings" held under no tent roof, but in open air, like the "*Guirimears*" of ancient Cornwall, were laws that have an abiding historical significance for all Americans.

APPENDIX.

Examples of Mining District Laws,

WITH QUOTATIONS FROM TERRITORIAL AND STATE ENACTMENTS, AND FROM REPORTS OF IMPORTANT TRIALS, SHOWING THE RESPECT PAID TO DISTRICT LEGISLATION.

PLACER LAWS OF COLUMBIA DISTRICT, TUOLUMNE CO., CALIFORNIA, 1854.

Article I. The Columbia Mining District shall hereafter be considered to contain all the territory embraced within the following bounds: Beginning at the site of McKenny's old store on Springfield Flat, and running in a direct line to a spring on a gulch known as Spring Gulch—said gulch running in a southern direction from Santiago Hill. Thence in a direct line to the angle of the road leading from Saw Mill Flat to Kelly's Ranch, near Woods Creek. Thence along the ridge on the west of Woods Creek to the southern bounds of Yankee Hill district. Thence, following the ridge to the high flume between Columbia and Yankee Hill. Thence, following the New Water Company's ditch to Summit Pass. Thence in a direct line to the head of Experimental Gulch, including said gulch. Thence, following the upland to the head of Fox Gulch, and including said gulch. Thence, following the upland around the head of Dead Man's Gulch to the site of the Lannesdale Saw Mill. Thence in a direct line to the place of beginning.

Art. II. A full claim for mining purposes on the flats or hills in this district shall consist of an area equal to that of one hundred feet square. A full claim on ravines shall consist of one hundred feet running on the ravine, and of a width at the discretion of the claimant, provided it does not exceed one hundred feet.

Art. III. No person or persons shall be allowed to hold more than one full claim within the bounds of this district, by location; nor shall it consist of more than two parcels of ground, the sum of the area of which shall not exceed one full claim; *Provided* that nothing in this article shall be so construed as to prevent miners from associating in companies to carry on mining operations, such companies holding no more than one claim to each member.

Art. IV. A claim may be held for five days after water can be procured at the usual rates, by distinctly marking its bounds by ditches, or by the erection of good and sufficient stakes at each corner, with a notice at each end of the claim, followed by the names of the claimants, and by recording the same according to the provisions of article ten.

Art. V. When a party has already commenced operations upon a claim, and is obliged to discontinue for want of water, or by sickness or unavoidable accident, the presence upon the ground of the tom and sluices, or such machines as are employed in working the claim, shall be considered as sufficient evidence that the ground is not abandoned, and shall serve instead of other notice; the bounds of the claim being still defined.

Art. VI. Claims shall be *forfeited* when parties holding them have neglected to fulfil the requirements of the preceding articles, or have neglected working them for five days after water was procurable at usual rates, unless prevented by sickness or unavoidable accident, or unless the miners have provided by law to the contrary. [This peculiar clause may be construed to mean that if the miners thought the owners of "water-privileges" were charging exorbitant rates, they could temporarily enact that cessation of work should not cause forfeiture].

Art. VII. Earth thrown up for the purpose of working shall not be held distinct from the claim from which it was taken, but shall constitute part and parcel of such claim.

Art. VIII. Water flowing naturally through gold-bearing ravines shall not be diverted from its natural course without the consent of parties working on such ravines, and when so diverted it shall be held subject to a requisition of the parties interested.

Art. IX. No Asiatics shall be allowed to mine in this district.

Art. X. Any or all claims now located or that may hereafter be located and worked, can be laid over at any time, *for* any length of time not to exceed six months, by the person or persons holding the same appearing before the Recorder of the District, with two or more disinterested miners, who shall certify over their own signatures that the said claim or claims cannot be worked to advantage, and by having the same recorded according to the laws of the District; and by paying a fee of one dollar: *Provided*, that each claimant shall sign the record in person or by a legal representative, stating at the time that said claim is held by location or by purchase.

Art. XI. There shall be a recorder elected who shall hold his office for one year from the date of his election, or until his successor be elected, whose duty it shall be to keep a record of all miners' meetings held in the district; to record all claims; and to call miners' meetings by posting notices throughout the district whenever fifteen or more miners shall present him with a petition stating the object of the meeting: *Provided*, that in the absence of the Recorder the above-named number of miners shall not be disqualified to call such a meeting. He shall at all proper times keep his record book open for inspection.

Art. XII. No company or companies of miners who may occupy the natural channel through any gulch or ravine for a tail-race or flume shall have the exclusive right to such a channel, to the exclusion of any company of miners who may wish to run their tailings into the same.

Art. XIII. Any party or parties locating claims in gulches, where such flumes or tail-races exist, shall first confer with the owners of the same, . . . and in case of disagreement each party shall choose two disinterested miners and the *fourth* shall choose a fifth, who may determine the matter or matters in dispute.

Art. XIV. Any company or companies of miners shall have the right to run their water and tailings across the claim or claims below them, if it can be done without injury to the lower claims.

Art. XV. The limits of this District shall not be altered without the consent of a regularly called mass-meeting of the miners of the District.

Art. XVI. No miners' meeting held outside of [the town of] Columbia for the purpose of making laws to govern any portion of the district, or to amend these laws in any manner, shall be considered as legal.

Art. XVII. All mining laws of this district made previous to the foregoing are hereby repealed. [Passed in 1854, and in full force in 1866].

PLACER LAWS OF ALDER GULCH, MONTANA, 1864.

Preamble.

Whereas, the laws now in force in Fairweather District, Madison County, Montana, have proved insufficient to protect the rights of the miners of said district;

And whereas the rights and interests of the miners of the district are of such a nature as not to admit of a resort to the tedious remedy of the ordinary process of law for every violation of these rights;

Now, therefore, we, the miners of said district in public meeting assembled, in pursuance of legal notices for the purpose of defending our rights and duties, and the protection of our several interests, do hereby resolve and declare that the rules and provisions following shall be the law of Fairweather district from this date of enactment, viz: September 16th, 1864.

Article A.

Section 1. The officers shall consist of a President and Secretary who shall hold their offices for the term of six months, or until their successors are duly elected and enter upon the discharge of the duties of their office.

Sec. 2. It shall be the duty of the President to call a meeting of the miners of the district at any time on the written application of five claim holders of the district of which he shall give three days' notice . . . by written or printed advertisements . . . posted at three of the most public places in the district, and he shall preside over the meeting.

Sec. 3. It shall be the duty of the Secretary to attend all meetings . . . keep a true record . . . and file the same with the County Recorder.

Sec. 4. After suit commenced in any case wherein the title to a claim is called into question, neither party shall be held liable to represent said claim during the pendency of litigation, but the same shall be deemed to be represented in favor of the real owner by operation of law.

[*Sections* 5, 6, 7 and 8 refer to claims held by purchase, by lease or by pre-emption, authorizing all three forms when properly recorded.]

Sec. 9. Every claim shall be considered as pre-empted upon which the pre-emptor, a purchaser, shall, by himself, his agent, or hired hands, perform three full days' work in each week . . .; *Provided*, that each and all of such claims be recorded.

[*Sections* 10 and 11 define and limit the rights of co-partners, in claims and ditch enterprises.]

Sec. 12. The absence of any person from the district shall not impair or invalidate his rights: *Provided*, his interests are represented by his partners, agents, or men in his employ.

Sec. 13. The rights of a sick member shall be respected during his illness, and the certificate of a physician shall be sufficient evidence of such illness.

Sec. 14. Any miner who shall have expended $500 on his claim, or who, for want of money for opening the same, is unable to represent it according to law, shall have the privilege of working on any other claim in the district in order to raise money to enable him to fully open up his own claim: *Provided*, he shall put up notices on his own claim stating where he is at work, and his rights shall be respected during the time he is so at work for others.

Sec. 15. It shall and may be lawful for any person or company to dig a drain ditch through the claim of any person or persons and . . . [they] shall have a lien upon any and all such claims thoroughly drained for a just and equal proportion of the cost thereof . . .

Sec. 16. The water in any creek or gulch shall belong exclusively to the miners of that creek or gulch.

Sec. 17. Each gulch claim shall be entitled to one sluice-head of water, of not less than twenty inches . . . and such additional quantity as may be necessary . . . if not used to the injury of others.

Sec. 18. The interest of the holder or holders of any creek or gulch claim is hereby declared to be a chattel interest, consisting of the right to the possession of the land and water thereupon inseparable and indivisible, except by the consent of the party or parties in interest made in due form of law, and then only to such an extent as shall not impair nor infringe upon the rights of others.

Sec. 19. No person or persons in company shall have the right . . . to claim and hold an exclusive right or privilege in or to any portion of the water in any creek or gulch in the district . . . and any ditch, pipe, channel, flume or other means of conveyance . . . by which water may be directed from its original channel without leaving in creek or gulch the quantity of water belonging to each claim, is hereby declared a public nuisance, and may be abated immediately . . . in accordance with the laws of this Territory.

[*Sections* 20, 21, 22, and 23, all refer to unlawful obstructions, tailings, leakage from flumes, and protection of drain ditches. The remaining four sections of this Article ordain that claims not earned according to the district customs shall be forfeited on November 1st, of each year, and liable to preemption by any person at any time before May 1st, when work in the district was commenced; they repeal all laws, parts of laws, and rules, customs, and regulations, in conflict with the present code, and they ordain that the new laws shall go into immediate effect.]

ARTICLE B.

Section 1. Bar mining claims shall consist of 100 feet up and down the gulch or creek, and running back the width of the bar.

Sec. 2. Creek claims shall be 100 feet in length, and including the bar, or creek bottom, and the head of the stream.

Sec. 3. All discovery claims shall be safely held whether worked or not.

Sec. 4. The centre of the creek shall be the line.

QUARTZ LAWS OF REESE RIVER DISTRICT, NEVADA TERRITORY, 1864.

Section 1. The district shall be known as the Reese River Mining District, and shall be bounded as follows, to wit: On the north by a distance of ten miles from the Overland Telegraph Line, on the east by Dry Creek, on the south by a distance of ten miles from the Overland Telegraph Line, and on the west by Edward's Creek, where not conflicting with any new districts formed to date.

Sec. 2. There shall be a Mining Recorder elected on the first day of June next, for this district, who shall hold office for one year from the seventeenth of July next, unless sooner removed by a new election, which can only be done by a written call, signed by at least fifty claim holders, giving notice of a new election to be held after said notice shall have been posted and published for at least twenty days, in some newspaper published in or nearest this district; and the Recorder shall be a resident of this district.

Sec. 3. It shall be the duty of the Recorder to keep in a suitable book or books, a full and truthful record of the proceedings of all public meetings; to place on record all claims brought to him for that purpose, when such claim shall not interfere with or affect the rights and interests of prior locators, recording the same in the order of their date, for which service he shall receive One Dollar ($1) for each claim recorded. It shall also be the duty of the Recorder to keep his books open at all times to the inspection of the public; he shall also have the power to appoint a deputy to act in his stead, for whose official acts he shall be held responsible. It shall also be the duty of the Recorder to deliver to his successor in office all books, records, papers, etc., belonging to or pertaining to his office.

Sec. 4. All examinations of the record must be made in the full presence of the Recorder or his deputy.

Sec. 5. Notice of a claim of location of mining ground by any individual, or by a company, on file in the Recorder's office, shall be deemed equivalent to a record of the same.

Sec. 6. Each claimant shall be entitled to hold by location two hundred feet on any lead in the district, with all the dips, spurs, and angles, offshoots, outcrops, depths, widths, variations, and all the mineral and other valuables therein contained—the discoverer of and locator of a new lead being entitled to one claim extra for discovery.

Sec. 7. The locator of any lead, lode, or ledge in the district shall be entitled to hold on each side of the lead, lode, or ledge located by him or them, one hundred feet; but this shall not be construed to mean any distinct or parallel ledge within two hundred feet other than the one originally located.

Sec. 8. All locations shall be made by a written notice posted upon the ground, and boundaries described, and all claimants' names posted on the notice.

Sec. 9. Work done on any tunnel, cut, shaft, or drift, in good faith, shall be considered as being done upon the claim owned by such person or company.

Sec. 10. Every claim (whether by individual or company) located, shall be recorded within ten days after the date of location.

Sec. 11. All miners locating a mining claim in this district, shall place and maintain thereon a good and substantial monument or stake, with a notice thereon of the name of the claim, the names of the locators, date of location, record, and extent of claim. It is hereby requested that owners in claims already located do comply with the requirements of this section.

Sec. 12. The Recorder shall go upon the ground with any and all parties desiring to locate claims, and shall be entitled to receive for such service One Dollar for each and every name in a location of two hundred feet each.

Sec. 13. It is hereby made the duty of the Mining Recorder upon the written application of twenty-five miners, to call a meeting of the miners of the district by giving a notice of twenty days through some newspaper published in the Reese River District, which notice shall state the object of the meeting, the place and time of holding the same.

Sec. 14. The laws of this district passed July 17th, 1862, are hereby repealed.

Sec. 15. These laws shall take effect on and after June 4th, 1864.

PLACER LAWS OF CŒUR D'ALENE DISTRICT, IDAHO, 1884.

The local laws of the Cœur d'Alene mining district located on Pritchard and Eagle creeks, Shoshone county, Idaho Territory, adopted by the first permanent miners in that region, were as follows:

Section 1. All locations on lodes of veins of quartz to conform with the United States laws of May 10, 1872, as nearly as practicable, viz: Fifteen hundred feet (1500) in length, by six hundred feet in width.

Sec. 2. Placer mining claimants shall be allowed twenty acres, to be located so that the length shall not exceed eighty rods.

Sec. 3. Each location shall be represented by the locator or his authorized agent in locating and recording.

Sec. 4. No person shall be restricted to one claim, but may locate one claim in any stream or gulch where vacant ground may be found. But no person shall be allowed to locate more than one claim on the same stream or gulch. Persons shall not be prohibited from holding claims acquired by purchase.

Sec. 5. Claimants shall have one year from the first of January succeeding the date of location to work their first annual assessment which shall be one hundred dollars. Each year thereafter claims shall be represented by twenty dollars' worth of labor each month after the first of June until the first of November after the first year's assessment. Furthermore, all claims shall be considered laid over from the first of November to the first of June. All necessary work, such as making roads or trails, building houses, or any improvements in opening or working a claim, will be allowed five dollars per day as assessment labor.

Sec. 6. Claimants will be required to record their claims in the district record within fifteen days from the date of location.

Sec. 7. The oldest or first claimants shall have the first privilege of water, but shall not prohibit others from using the surplus water, and all claimants shall be required to return the water to the channel of the stream for the benefit of those below.

Sec. 8. Several miners may form a company for the purpose of opening and working mines in placer claims, when such claims are contiguous, and the labor performed by said company shall represent their several claims, although the amount of labor for the convenience of opening and working may be done on one claim.

Sec. 9. Difficulties arising between parties in the mining district shall be settled by arbitration, each disputant to be allowed an equal number of arbitrators, and in case of a tie on decision said arbitrators will have power to call an assistant.

Sec. 10. All claims located prior to the date of the adoption of these by-laws shall be respected just the same as those made after said date.

Sec. 11. The records of the Cœur d'Alene Mining District, in Shoshone county, Idaho Territory, shall be kept at the house of A. J. Pritchard, Recorder, near the confluence of the Eagle and Pritchard creeks.

Sec. 12. On the written application of twelve or more miners, the Chairman shall cause three notices to be posted up in three conspicuous places, giving ten days' notice of a meeting, said notices to specify the object and business to be transacted at such meeting. To make any changes in the present by-laws between the 1st of November and the 1st of June the following year shall be illegal.

Sec. 13. These laws shall take effect from this date, and any laws or regulations previously enacted that conflict with these laws shall be considered repealed.

Judicial Decisions upon Local Rules, Usages and Customs.

"The Code permits evidence of the customs established in mining claims, which implies a permission on the part of the State to the miner to seek whatever he choose in the mines for the precious metals, and extends to him whatever right the State might have to the mineral when found."—*Case of McClintock vs. Bryden, 5 Cala. Reports, p.* 100.

"The custom of miners is entitled to great if not controlling weight."—*Brown vs. "49 and 56" Quartz Mining Co.,* 15 *Cala. Rep.,* 160.

"The quantity of ground a miner can claim by location or prior appropriation for mining purposes may be limited by the mining rules of the district."—*Prosser vs. Parks,* 18 *Cala.,* 47.

"The fact that mining laws and regulations were passed on a different day from that advertised for a meeting of miners, does not invalidate them. Courts will not inquire into the regularity of the modes by which these local legislatures or primary assemblages act. They must be the judges of their own proceedings. It is sufficient that the miners agree—whether in public meeting or after due notice—upon their local laws, and that these are recognized as the rules of the vicinage, unless fraud be shown, or other like cause for rejecting the laws."—*Gore vs. McBrayer,* 18 *Cala.,* 582.

"A mining claim must be in some way defined as to limits before the possession of the work upon part gives possession to any more than the part so possessed or worked. But when the claim is defined, and the party enters in pursuance of mining rules and customs, the possession of part is the possession of the entire claim."—*Atwood vs. Fricot*, 17 *Cala.*, 37.

"Although mining ground . . . may be located in the absence of local regulations, yet the extent of such location is not without limit. The quantity taken must be reasonable, and whether it be so or not will be determined by the general usages and customs prevailing upon the subject. If an unreasonable quantity be included . . . the location will not be effectual."—*Table M. T. Co. vs. Stranahan*, 20 *Cala.*, 198; 21 *Cala.*, 548.

"Mining laws, when introduced as evidence are to be construed by the Court, and the question whether, by virtue of such laws a forfeiture had occurred is a question of law, and cannot be submitted to a jury."—*Fairbank vs. Woodhouse*, 6 *Cala.*, 433.

"A party having abandoned his claim will not be permitted to . . . re-assert or resume his former interest to the prejudice of those who may have afterwards appropriated it."—*Davis vs. Butler*, 6 *Cala.*, 511.

"The book in which claims are recorded by resolution of the miners of a district may be admitted as evidence."—*McGarrity vs. Byington*, 12 *Cala.*, 426.

"Mining claims are held by possession, but that possession is regulated and defined by usage and by local and conventional rules, and the "actual possession" which is applied to agricultural lands cannot be required in case of a mining claim."—*Atwood vs. Fricot*, 17 *Cala.*, 37.

"A miner is not expected to reside on his claim, nor build on it, nor cultivate it, nor enclose it. He may be in possession by himself, or his agents, or servants."—*English vs. Johnson*, 17 *Cala.*, 107.

"From an early period of our State's jurisprudence we have regarded claims to public mineral lands as titles. . . ."—*Merritt vs. Judd*, 14 *Cala.*, 64.

"A writing is not necessary to vest or divest title on taking up a mining claim. The right of the miner comes from the mere appropriation of the claim made in accordance with the mining rules and customs of the vicinage." "The right to mining ground rests on possession only, and rights of this character need no conveyance other than a transfer of possession." "The State Act of April 13th, 1860, permits bills of sale without seal to pass title." "Transfer may as well be by simple agreement as by deed, the vendee taking possession." Cases of *Jackson vs. Feather River & Gibsonville Water Co.*, 14 *Cala.*, 22; of *Gore vs. McBrayer*, 18 *Cala.*, 582; of *McCarron vs. O'Connell*, 7 *Cala.*, 152; of *Watt vs. White*, 13 *Cala.*, 324.

"The public mineral lands of this State are open to every person who chooses to enter upon them for the purpose of mining. But this rule has its limitations to be fixed by the facts in each particular case. Certain rights of property, though not founded on a legal title, will be protected against the miner,—such as houses, orchards, vineyards and growing crops." "The right of the agriculturist to use and enjoy public lands must yield to the right of the miner when gold is discovered in the land." The agriculturist "has settled upon such lands subject to the rights of the miners who may proceed in good faith to extract any valuable metals that may be found in the lands so occupied by the settler." "The right to so enter, and mine carries with it the right to whatever is indispensable for the exercise of this mining privilege,—as the use of the land, and such elements of the freehold as water." "It carries with it the right to the wood and timber growing thereon."—See cases of *Smith vs. Doe*, 15 *Cala.*, 100; *Clark vs. Duval*, 15 *Cala.*, 88; *Tartar vs. Spring Creek W. & M. Co.*, 5 *Cala.*, 395; *Lentz vs. Victor*, 17 *Cala.*, 271.

"The first appropriator of water for mining purposes is entitled to have the water flow without material interruption in its natural channel."—*Bear River and Auburn Water and Mining Company vs. New York Mining Co.*, 8 *Cala.*, 333.

"Surveys, notices, stakes, and the blazing of trees, followed by work and labor, without abandonment, will in every case give title to unclaimed water on public lands over after-claimants."—*Kimball vs. Gearheart*, 12 *Cala.*, 27.

"The interest of the occupant of a mining claim is property, and is liable to taxation. The 'claim' is property and . . . may be taken and sold under execution."—*Cases of McKeon vs. Bisbee*, 9 *Cala.*, 137; *California vs. Moore*, 12 *Cala.*, 56.

Legislative Acts.

"In all actions respecting mining claims, proof shall be admitted of the customs, usages, or regulations established and in force in the mining district embracing such claim; and such customs, usages or regulations, when not in conflict with the laws of this Territory, shall govern the decision of the action in regard to all questions of location, possession, and abandonment."—*Laws of Nevada Territory, approved Nov.* 29, 1861. *Similar laws in Oregon, Arizona, Idaho, Montana and Colorado.*

"All conveyances of mining claims heretofore made by bills of sale or other instruments in writing, with or without seals, recorded or unrecorded, shall be construed in accordance with the lawful local rules, regulations, and customs of the miners in the several mining districts of this Territory; and if heretofore regarded valid and binding in such districts shall have the same force and effect between the parties thereto as *prima facie* evidence of sale, as if such conveyances had been made by deed under seal."

"The location and transfers of mining claims heretofore made shall be established and proved, in contestation before Courts, by the local rules, regulations, or customs of the miners in the several mining districts of the Territory in which such locations and transfers were made."—*Laws of Nevada, Dec. 12, 1862.*

Extracts from United States Mining Law.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That all valuable mineral deposits in land belonging to the United States, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase, by the citizens of the United States, and those who have declared their intention to become such, under regulations prescribed by law, *and according to the local customs or rules of miners, in the several mining districts,* so far as the same are applicable and not inconsistent with the laws of the United States.

Sec. 2. That mining claims upon veins or lodes of quartz or other rock in place, bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits heretofore located, *shall be governed, as to length along the vein or lode, by the customs, regulations and laws in force at the date of their location.* A mining claim located after the passage of this act, whether located by one or more persons, may equal, but shall not exceed, one thousand five hundred feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the vein or lode within the limits of the claim located. No claim shall extend more than three hundred feet on each side of the middle of the vein at the surface, nor shall any claim be limited, by any mining regulation, to less than twenty-five feet on each side of the middle of the vein at the surface, except where adverse rights existing at the passage of this act shall render such limitation necessary. The end lines of each claim shall be parallel to each other.

Sec. 3. That the locators of all mining locations heretofore made, or which shall hereafter be made, on any mineral vein, lode, or ledge, situated on the public domain, their heirs and assigns, where no adverse claim exists at the passage of this act, so long as they comply with the laws of the United States and the State, Territorial, *and local regulations, not in conflict with said laws of the United States, governing their possessory title,* shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes, and ledges, throughout their entire depth, the top or apex of which lies inside of such surface lines extended downward vertically, although such veins, lodes, or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side-lines of said surface locations: *Provided,* that their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward as aforesaid, through the end-lines of their locations, so continued in their own direction that such planes will intersect such exterior parts of said veins or ledges.

Sec. 5. That the *miners of each mining district* may make rules and regulations, not in conflict with the laws of the United States, or with the laws of the State or Territory in which the district is situated, *governing the location, manner of recording, amount of work necessary to hold possession of a mining claim*, subject to the following requirements: The location must be distinctly marked on the ground so that its boundaries can be readily traced. All records of mining claims hereafter made shall contain the name or names of the locators, the date of the location, and such a description of the claim or claims, located by reference to some natural object or permanent monument, as will identify the claim. On each claim located after the passage of this act, and until a patent shall have been issued therefor, not less than one hundred dollars' worth of labor shall be performed or improvements made during each year. On all claims located prior to the passage of this act, ten dollars' worth of labor shall be performed or improvements made each year for each one hundred feet in length along the vein, until a patent shall have been issued therefor; but where such claims are held in common, such expenditure may be made upon any one claim; and upon a failure to comply with these conditions, the claim or mine upon which such failure occurred shall be opened to relocation in the same manner as if no location of the same had ever been made.—*Act of May* 10th, 1872.

The legal *form* of Location Notice is as follows:

Notice is hereby given that the undersigned, having complied with the requirements of the mining act of Congress, approved May 10, 1872, and the *local customs, laws and regulations*, has located fifteen hundred linear feet on .... lode (twenty acres of placer mining ground) situated in .... mining district, ... county, ..., and described as follows: (Describe the claim accurately, by courses and distances, if possible; by legal subdivisions, if a placer claim is located on surveyed land.)

Located.........188... ....
Recorded.........188... (Name of locator.)

[Record of location notices, in absence of a District Recorder, should be made with the proper Recorder of Deeds *for* the county wherein the claim is situated. The affidavits of at least two disinterested persons that all the requirements of the Congressional and *local laws* have been complied with, should also be recorded.]

The legal *form* for "proof of possession" where there is no "written title" contains the following: (U. S. Mining Laws, G. F., 1875, Form K.)

"That said mine was *located and has been possessed and worked in accordance with the customs and usages of miners in said district*, and in conformity with the rules and regulations regulating the location, holding and working of mining claims, in force and observed in the State of .... That there are no written records known to deponent existing in said mining district. That affiant is credibly informed and believes that the .... mine was located in the year 18..., and that if any record was made of said location, and of the names of the locators, the same has not been in existence for a long number of years past, and that by reason thereof the names of locators cannot now be ascertained, and no abstract of title from locators to the present owner can be made. That the possession of applicant and his predecessors in interest of said .... mine, has been actual, notorious, and continuous, to the positive knowledge of deponent, since his residence in said mining district, *and that such possession has been perfected and maintained, in conformity with mining usages and customs, and has been acquiesced in and respected by the miners of the said district.*"

The legal form for a "protest and adverse claim" contains the following: (Form O.)

"That said lode (or placer claim) is in the .... Mining District.

"That on the day of its location the premises hereinafter described were mineral lands of the public domain, and entirely vacant and unoccupied, and were not owned, held, or claimed by any person or party as mining ground or otherwise, and that while the same were so vacant and unoccupied and unclaimed, to wit: On the .... day of .... 18..., (name locators), each and all of them being citizens of the United States, entered upon and explored the premises, discovered and located the said .... lode, and occupied the same as mining claims. That said locators, after the discovery of said .... lode, drove a stake on said lode on the discovery claim, erected a monument of stone around said stake, and placed thereon a written notice of location, describing the claim so located and appropriated, giving the names of the locators and quantity taken by each, and *after doing all the acts and performing all the labor required by the laws and regulations of said .... mining district and territory of ....*, the locators of said lode caused said notice to be filed and recorded in the proper books of record in the Recorder's office in said district on the .... day of ...., 18...

"And affiant further says, that said locators, *in all respects, complied with every custom, rule, regulation, and requirement of the mining laws, and every rule and custom established and in force in said .... mining district, and thereby became and were owners* (*except as against the paramount title of the United States*) *and the rightful possessors of said mining claims and premises.*

"And this affiant further says, that *said locators proved and established to the satisfaction of the Recorder of said .... mining district, that they had fully complied with all the rules, customs, regulations, and requirements of the laws of said district, and thereupon the said Recorder issued to the locators of said .... lode, certificates confirming their titles and rights to said premises.*"

[Points bearing on local law italicized in above quotations from U. S. mining law.]

Chief Authorities.

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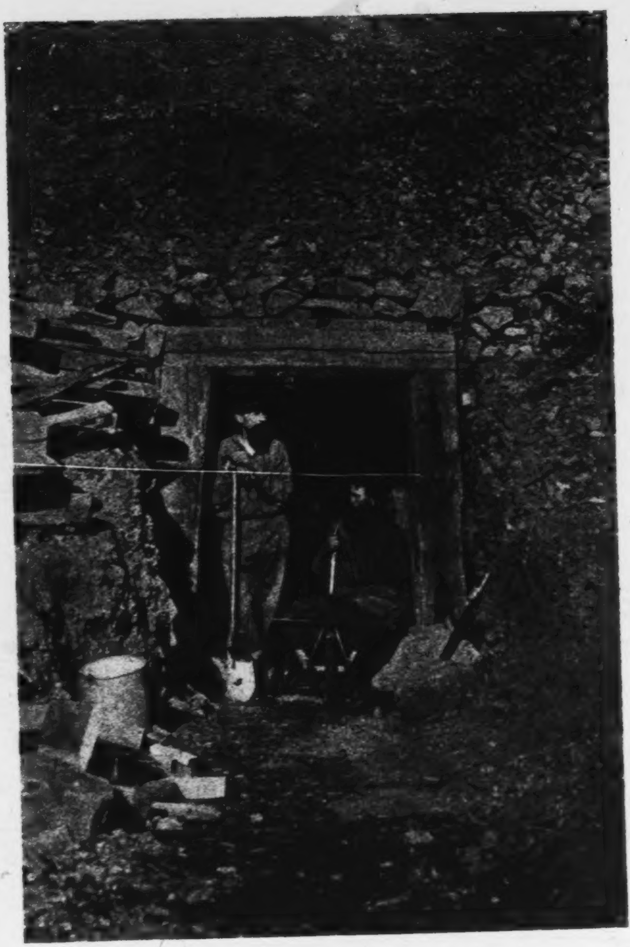

At the Mouth of a Tunnel, Sierra Nevada Mine.

HE
JOHN CRERAR

THE STORY OF THE MINE

AS ILLUSTRATED BY THE
GREAT COMSTOCK LODE OF NEVADA

BY

CHARLES HOWARD SHINN

ILLUSTRATED

NEW YORK
D. APPLETON AND COMPANY
1896

EDITOR'S PREFACE.

In accordance with the plan of the Story of the West Series for the presentation of the characteristic phases and types offered by the evolution of the real West—the great country lying for the most part beyond the Missouri—Mr. Shinn, out of a singularly complete personal knowledge, tells in this volume The Story of the Mine. Like Mr. Grinnell, in his Story of the Indian, Mr. Shinn does not aim at a comprehensive history, but he illuminates its salient points. There are allusions in his pages which afford glimpses into this romantic and varied history from the Toltec legends, the Aztec discoveries, the fierce treasure hunts of the Spaniards, the desultory quests of later Anglo-Saxons, the epoch-making event at Sutter's Mill, the development of the great Comstock lode, and the feverish searching from the Sierra Madre to Alaska, which at one time and another has brought before the world the gold fields of Idaho or the blanket deposits of Tombstone, the rich silver ores of Leadville or the wealth of Butte and Helena, the placers of California, or the silver of Cripple Creek. These glimpses show us

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the figures of the prospector and the miner, types different yet still closely related despite the vast modern changes in conditions and methods. By dwelling particularly upon the life history of one great lode, Mr. Shinn has succeeded in bringing these figures out in clear relief, and also in presenting some of the more significant aspects of the evolution of the mining industry. It is not easy for one who has camped with eager prospectors, who has followed the miner's candle through dark galleries and has seen the sharp contrasts of mining life, to introduce such a narrative as this without emphasizing, perhaps unduly, its romantic interest. That interest is constant, but there is also the interest belonging rightfully to a great industry which energy and science have developed to a high point of perfection. Nowhere else on this continent has this development been better illustrated than on the Comstock lode. Nowhere else could the author have found a happier means of exemplifying the entire range of mining life.

The picture of this life drawn by Mr. Shinn is of lasting as well as timely interest. He has not written to advocate any theory, nor to deal with any special issue. He has simply told the actual story, and it is such writing which is needed for a better understanding of the conditions met with, and the splendid energy and resourcefulness displayed in the building of our West. Within the last few years expansion westward has been checked and the reaction has brought problems which may seem serious, though no true American can be doubtful as to the ultimate destiny of our country. Many of the typical figures of Western development have passed, and their preservation as historical types is the object of this series. The miner, though transformed in many ways, is a figure of the present as well as the past, and in presenting him and his work in this volume, Mr. Shinn has not only contributed to American history something of lasting value, but he has also furnished for those who sometimes read between the lines another reason for pride in the qualities which have conquered this continent and an aid to the understanding and sympathy which make for a perfect national unity.

RIPLEY HITCHCOCK.

AUTHOR'S PREFACE.

In times when a dedication to some individual was thought as necessary a part of a completed book as the title page, I should have had serious trouble in choosing among the many who have helped me in the writing of this book. There are some now with us no more—genial J. Ross Browne, honest Henry De Groot, thoughtful Dr. Gally, and others—more than I have space to name. There are some who still live in this busy world, and who once helped to chronicle from day to day the life of the mining camp—Dan De Quille, the only real historian of the Comstock; Judge C. C. Goodwin, of Salt Lake; Arthur McEwen; our own Mark Twain; and Sam Davis, of Carson. Many other builders of Nevada have helped in the preparation of this volume, from Mayor Sutro, of San Francisco, to scores of miners and prospectors. Prof. S. B. Christy, of the University of California, has kindly looked over the more technical chapters. Without venturing upon a formal inscription to any one, in these days when dedications appear a little out of place, I have, nevertheless, held in mind all the toiling frontiersmen of the world of miners. This volume, therefore, is in essence, though not in name, dedicated to that vast body of men whose daily life it describes, and, not least among them, to that plain, lonely workman, the American Prospector.

CHARLES HOWARD SHINN.

NILES, CALIFORNIA, *September, 1896.*

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THE STORY OF THE MINE.

CHAPTER I.

MINERS AND MINING CAMPS.

THIS book is not a technical treatise upon the mining industry. It is only an attempt to describe in a clear and simple way some of the every-day features, as well as some of the unusual things, that belong to mines, keeping constantly in view the purely human elements of the story.

Many writers go into the mining camps of the West and endeavour, after various fashions with varying degrees of success, to fix in words the changing life of those camps. More often than otherwise the resulting poem, story, or sketch rings false; it is overwrought and passionate; it lacks the simple emotions; pistols and bandits abound in a nickel-novel atmosphere. Things that are on the surface of mining-camp life are easy to see, but no one can give even this a reality unless he understands the people and the occupation by that which is more than study—the sympathy and affection born from years of close fellowship.

I remember an old Nevadan silver freighter who walked all day long for many successive weeks, months, and years beside his high ore wagon across the Nevada desert. He was one of brave old Dr. Gally's companions; he had read those rough, breezy, genuinely frontier articles that "Single-line" used to publish in mountain newspapers; he knew the whole Iliad of the Nevada fighting editors by heart. I remember well how slow, simple, and methodical was this old American silver freighter, patiently plodding back and forth over a land of desolation, placidly sorting out his ideas until they were as sweet and real as winds from Sierra pine forests.

Said he, one night in camp, "I had an odd notion lately. I thought that perhaps one of these days, when all the frontiersmen have been dead a hundred thousand years, the stories that will be written and believed about them will be much like those of the demigods." My old freighter could have shown a college degree if he had cared to (which he never did), and he knew his mythology as well as Leland knows his gipsies.

"Some fellow, I don't know who," the silver freighter continued, "has got to stand right out from the ruck some of these days to represent all the pioneering that has been done by hundreds and thousands of us for generations on this continent. It might be a fellow with buckskins and Kentucky rifle, or another with slouch hat and mule whip, or Doc. Gally's 'Big Jack Small,' the bull-puncher.

"As I was saying, it might turn out to be a plain freighter. But the freighter is simply packing around some one else's ore. The miner is behind him, working even harder. Out yonder, fifty miles in the desert, there's a man and his wife hammering the drill, blasting rock, opening their mine. Been there all by themselves for five or six years. Maybe their mine will peter out; maybe they'll die there, and some ore freighter will put them under the sand.

"Yes, and behind the miner there's another fellow of the same sort, only more primitive. Sometimes I think he stands up taller than all of us put together. He is looking for ore, and he keeps on looking till he dies. When every mine has been found, named, and worked, when the whole land is settled and has been fenced off into acre-lots and forties for ten thousand years, what kind of stories do you suppose men will be telling their children about the Nineteenth-Century Prospector?"

My old silver freighter leaned silent on his whip-stock. Lonely, toiling men and women of countless mining camps, not only in America but all over the world and ever since the bronze age began, seemed to become but voices that mingled in one great chorus as the separate parts of the ship in Kipling's story found, by losing themselves, the Voice of the Whole. We stood side by side, and both of us were thinking of the myth spirit which works continually among men, but only at long intervals reaches full achievement. The goddess of myths has not chosen among the founders of the American colonies, splendid though their victories were; nor has she taken the buckskin-clad Boones and Crocketts, for even these, though unique, lack something of the universal. It will not be trapper, or hunter, or mountain guide, or Remington's virile horsemen, noble and eloquent types though all these certainly are.

But what is more likely, when one considers the settlement of the far West, than that a myth of the miner shall grow, unseen, and find ultimate expression in art, song, and literature? The hills will some day be empty of gold. The waters will reclaim the deserts. New and strange conditions of life will prevail over all the lands between Atlantic and Pacific. But the great myth story of the West will have to do with some Titan of Sierras or Rockies, leaning upon his mighty pick, as Thor upon his Mjolnir. Strong and lonely as a grizzly, the prospector will "stand right out," in the words of the silver freighter, "to represent all the pioneers."

Far enough are we from any immediate apotheosis of the much-enduring miner, who is the last of men to magnify his calling. If, now, we endeavour to select some group of mines, or some mining period of especial importance, which shall fitly illustrate the more brilliant achievements of miners, we shall have many claimants to consider. One might even find great and characteristic groups of classic mines in Mexico and South America, such as the Sierra Madre with its authenticated yield of more than $800,000,000, or the still more famous Potosi, which in three and a half centuries poured forth about $1,400,000,000 in gold and silver. The Spanish American is a little-understood fellow-creature, with an especially "good nose for silver," as the saying goes. Some one will come along, sooner or later, who has carried ore in rawhide bags up the slippery, notched posts that the Mexicans call ladders, who has summered and wintered with José and Juan, and who knows their pet superstitions, their hereditary and acquired mine lore. Then we shall have the quaint and pretty story of the Mexican mine, but the story herein told must keep to more familiar ground.

In the United States there has never been a more dramatic episode than the Californian gold rush of 1848–'50—an episode that is in its way unique, the very epitome of the whole history of placer mining. After California were the gold placers of Colorado, Idaho, and Montana—the days of Pike's Peak, Salmon River, and golden Helena. As trained prospectors continued to explore the Sierras, the Rockies, and other mountains of North America, these were followed in swift succession by many equally important mineral discoveries. Then came the news of the famous fissure veins of "King Solomon Mountain," Ouray, and the whole wild San Juan region, first entered by that brave old prospector, John Baker, in 1860, but opened to the miners in 1873. Next, still-thriving Leadville won renown, with its "six log cabins" of August, 1877, and its "thirty-four huge smelters" of December, 1879. Work had hardly begun on the Leadville carbonates before Richard Gird and the Scheiffelin Brothers were astonishing the mining world with the rich chlorides, carbonates, and horn-silver of Tombstone.

The glories of many of these earlier camps have somewhat paled in recent years before the sudden and splendid records of new groups of mines, such as Cripple Creek and other frontier camps. Within the past five years more than a hundred promising new camps, some of them extremely profitable from "grass roots down," have been established all the way from the Mexican borders to the Yukon and its tributaries.

Nor has it been in the United States alone that mining for the precious metals has greatly increased in importance. The world's average yearly yield of gold alone during the first half of the century was only about $16,000,000, but the statisticians tell us that in 1895 about $205,000,000 in gold was taken from the mines. The details of this extraordinary increase in the world's mine-yield belong to the history of colonies, states, and nations. A few of the more striking results can be given here. Russia, owing to Siberian discoveries, turned out $34,000,000 in gold last year, the highest amount in her records. Australasia has increased its output from $25,000,000 in 1887 to $44,000,000 in 1895. The total yield of Africa was about the same last year as that of Australasia. New mines are rapidly making records all the way from Patagonia to British Columbia. Even now syndicates are endeavouring to obtain entry into the mineral districts of China, hoping to find another California.

While this book was being written, mining interests the world over were each day more potent factors in the social, industrial, and political life of the nations. New captains of industry have come to the front in lands which five years ago were strange names in the ears of men. Frontier battles have been fought, the world's peace has been seriously threatened, the whole complex machinery of modern diplomacy has been set in motion to avert disaster, and through it all one hears the vibratory ring of the miner's drill, uncovering hidden ledges in Africa, Asia, South America, and rousing the fierce gold hunger of mankind. Plot and counterplot shake the secret places of the earth today, and, for a time at least, the central figure of it all is the prospector, going forth to strike again the keynote of Spain, of California, of Australia, of South Africa; to find and conquer a desert, waste and terrible; to build cities, and carry farmers to unpeopled valleys; to give to the new land railroads, fleets of ships, mounted police, armies, legislatures—and then to fling it down, one more colony or commonwealth, whose corner stone is based on quartz, and to go on into some untrodden wilderness.

What a strange and brilliant procession of bankers, lawyers, speculators, politicians, statesmen, cabinet ministers, lords and ladies of high degree, princes of blood royal, presidents and monarchs are, even now, pressing with reckless haste on the trail of the flannel-shirted prospector! No great artist has ever painted a picture of this wild procession, storming so fiercely into newly discovered groups of mining camps. Each generation would have different figures made prominent, but there would always be the camp followers, the outriders, the dead and dying, the utmost follies, the darkest crimes, the noblest self-sacrifices. Limitless avarice, Timon-like hate, courage great as that of the gods themselves, are in the unending march. Some few loom up along its changing lines, the briefly worshipped, the swiftly forgotten, of each fierce gold rush. Once it was some nameless Phœnician speculator, some Roman who farmed out half the mines of Spain, some successful free-lance adventurer from India or Brazil. History has kept scant record of the thousands of Rhodeses and Barnatos, of I. D. B. robberies, of outlanders and of chartered companies, the men who rose and fell, singly or in groups, ceaseless and changing as the waves of ocean, age after age, while the miner moved on from camp to camp with this multitudinous army roaring sealike in his wake.

CHAPTER II.

A LAND OF PRECIOUS METALS.

As it happens, there is one place in America where mining for the precious metals has been carried on upon so grand a scale and under such stupendous difficulties that the results of the struggle with Nature's forces have greatly affected the mining interests of the world. Whether we consider the Comstock vein of Nevada from the standpoint of its mineral yield, or study the dramatic elements in its strange history, the group of mines along its course is typical, in the most complete sense, of the dangers and vicissitudes of mining life. The term "Comstocker" is known in every country and in every language; the Comstock miner is everywhere recognised as a post-graduate among miners of other camps. World-famous mining engineers have taxed their utmost skill in the service of the Comstock; the greatest geologists have given laborious days to the study of its marvels; travellers have gazed upon its mighty engines and threaded its vast underground cities; metropolises have been stirred to their profoundest depths by mining news from Comstock bonanzas. The reports of the United States Geological Survey sum up many laborious volumes about the Comstock by such statements as these: "Contributions of the first importance to mining science have been furnished." "Through contentions of its rival locators, our national mining legislation was mainly shaped."

"No subsequent discoveries can rival the influence of the lode."

Nevada, the country of the Comstock, is a part of the wonderful plateau known as the "Great Basin," lying between the Rockies and the Sierra Nevadas. I am indebted to Mr. S. T. Gage, of California, for knowledge of a remarkable prophecy made by Horace Greeley respecting this then-neglected region, in a speech delivered on the plaza of Placerville in the summer of 1859.

Toward the close of his address came these sentences: "Lastly, I have come across a desolate and terrible country, a land seemingly worthless forever—the Great American Desert. But I believe that the Almighty has created nothing in vain, and as I have passed over this awful region, the thought has fixed itself in my mind that, since it is certainly useless for every other purpose, it may be a land of vast mineral wealth. If that be so, it will take a hundred thousand Californian miners a hundred thousand years even to prospect it."

The rugged plateau to which Greeley alluded is from two to five thousand feet above the sea, and is between five and six hundred miles wide, becoming more narrow and sinking toward the north and south. Nevada, a large part of Utah, and parts of Oregon and California are included within its limits. The Great Basin, whose rims are the Sierra Nevada, the Wahsatch, and the Blue Mountains of Oregon, is crossed by mountains that divide it into a group of lesser basins, such as the Humboldt, the Washoe, the Carson, and the Walker. Even the valleys of the higher portion of the plateau are five and six thousand feet above the sea, while the greater mountain peaks rise five thousand feet more.

There are extensive deserts in the Great Basin, examples of which are the famous Death Valley, the Black Rock Desert, the Sage Desert, the Desert of the Colorado sloping south and west, the Forty-Mile Desert of the Humboldt region, and the Bitter Water district of the Armagosa. Everywhere are alkali plains spotted with scanty bunch grass and miles of basaltic rock, where a few stunted junipers and thorny cacti grow. Horned toads, lizards, scorpions, tarantulas, brush rabbits, sage hens, and innumerable crickets were about all the living creatures that the pioneers found as they toiled painfully across the deserts on their way to Oregon and California.

During ancient geologic periods, when the Rockies and the Sierras were being slowly uplifted from the ocean, an immense area of deep seas holding minerals in solution were for a time inclosed in the Great Basin, and beds of salt, sulphur, mica, borax, soda, arsenic, manganese, and other minerals deposited in water, remain as relics of that inland ocean. If the basin thus formed had contained no other mountains, the great desert would have been nearly or quite impassable for many years, and the development and history of the United States would have been seriously modified by a Sahara between the Mississippi Valley and the Pacific coast.

The problem of the method of ore distribution has interested leading geologists. According to Baron Richtofen, immense floods of fluid matter from undercrushed and folded strata of rock were slowly forced out through fissures during the gigantic processes of mountain creation. What Prof. Joseph Le Conte calls the "submountain reservoir" of fused matter thus supplied the sheets of lava many feet thick that occur in the Great Basin. The contents of the metalliferous veins were deposited by hot alkaline waters that came up through fissures with various minerals in solution. There are many different classes of mineral-bearing veins of rock, but the desire of the quartz miner is to find a "true fissure vein." By this he means one of the great breaks or fissures caused by a movement of the earth's crust and filled with ores—that is, with slowly deposited mineral substances. Such fissure veins are often very wide, of an immense depth, and occur in parallel groups.

The mountain system, more closely examined, gridirons the country with a hundred ranges from fifty to a hundred miles long. They rise three or four thousand feet above the plateau, the passes through them are often high and difficult, and many an isolated valley, remote from civilization, lies between their peaks. History is written in the strange names of these mountain chains. Some carry the trade-mark of the American trapper or prospector, as Carson, Buckskin, Muddy, and Pancake; others are Spanish, as Cortez, Pinon, and Vegas; but by far the greatest number are Indian, as Washoe, Toano, Shoshone, Toiyabe, Toquina, Wahsatch, and Pahranagat. Between the dark, treeless, and forbidding mountain ranges are narrow plains or valleys, some only a mile wide. The melting snows keep the grass green in the ravines and supply occasional springs and rivulets along the bases of the mountains, which unite in a few small rivers, every one of which, excepting the Rio Virgin and the Owyhee, soon disappears in the ground or in some lake or depression called a sink.

The earliest maps of the Great Basin and the traditions of Spanish explorers are only important as they serve to show the source of later misconceptions on the part of traders and colonists. The John Harris map of 1605 "seems to give," says Bancroft, "the name Quivira to a vast region which embraces Nevada in common with other undefined countries." In this map California is the island of Nova Albion. On the mainland, larger than Lake Superior, was the Lake of Thongo, from which two great rivers flowed to the Pacific. Most of its errors were perpetuated in Finley's map of 1826. According to such maps, the journey from the western base of the Rockies was through a comparatively level and well-watered country. The wandering trappers knew better than this, and map-makers would have done well to consult rough old Jim Bridger, Captain Ashley, or such leaders of the Hudson Bay Company as Peter Ogden, who was trapping on the Owyhee and the Humboldt long before Finley published his famous map.

But the trappers left little or no record of their wanderings, although they crossed the Sierras to the Spanish settlements, and named many a mountain peak and alpine pass in the years between 1825 and 1840. Walker, the guide, heroic William Sublette, Kit Carson, Captain Wyatt, Jedediah S. Smith, and nameless free trappers were adventurers in the Great Basin, and some of them soon carried back stories of placer gold, or even showed flakes of the precious metal when they wintered at the noisy frontier posts of the Rockies. For the most part, however, their tales were of suffering and disaster, of thirst and hunger in the deserts, and of hair-breadth escapes from hostile beasts and men.

After Frémont's explorations in 1844 and 1845 the main lines of travel were fairly well mapped out, and immigration went on with hardly a pause. The nomads of the Great Basin saw their hunting grounds invaded by longer lines of wagons and larger camps of white men. By 1847 the trails of the trappers had become such pathways that no guide was needed. Books, maps, and newspaper articles began to be published, giving directions to emigrants; signboards were put up at some of the points where roads divided. Rivers of changing life were flowing out of the Mississippi Valley toward the Columbia and the Golden Gate.

The fateful year 1848 brought the discovery of gold in Marshall's mill-sluice, and in an hour after the news went abroad the number of overland emigrants began to multiply. The beaten track became a broad highway, strewn with wrecks of wagons and bones of horses and cattle. Whole families took the long and toilsome journey through Salt Lake Valley, where the Mormon faith was established, and across deserts and mountains, day after day, week after week, until the crest of the Sierras was reached and every river flowed to the Pacific. One and all were gold seekers going to the California placers to make their fortunes. Their thoughts and talk were often of mining and miners. Yet these thousands of immigrants made camp after camp in what is now Nevada without dreaming that precious metals were hidden within easy reach!

CHAPTER III.

MORMON AND PIONEER GOLD.

WHILE eager miners were exploring the ridges and cañons of the western Sierras, the Latter-Day Saints, or Mormons, recognising the profound significance of the conquest of California and the discovery of placer gold, were making a gigantic effort to claim and conquer that great inland empire which they named the State of Deseret. The miner, whom they had learned to fear, had crossed this vast and undeveloped region, had pitched his tents where Mormon leaders were dreaming of a future seacoast possession. There was to be a struggle for that which remained. The famous State of Deseret, organized March 18, 1849, contained Utah, Nevada, Arizona, parts of Wyoming, Oregon, and Colorado, and nearly half of California, including San Diego Bay. Hundreds of the most prosperous mining camps of America lie within this huge circle.

The Mormon Church, after claiming this enormous domain, began to strengthen its outside colonies and established many others, to acquire political influence in new communities. It is easy to see that if the war with Mexico had been delayed a few years longer there might have been another independent State besides Texas, carved from Mexican territory, and treating with the United States of America as with a foreign power.

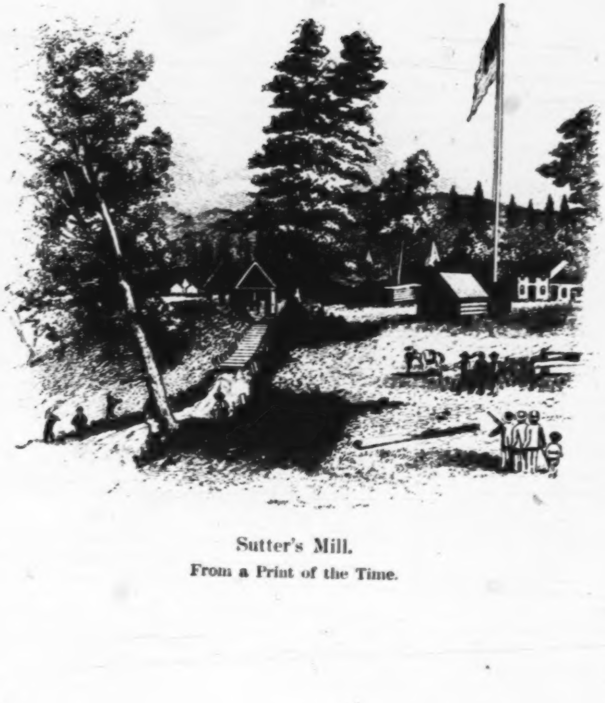
Immediately after organizing their new State the Mormons sent an expedition of eighty men into the western country, some of whom built a log cabin at "Mormon Station," in Carson Valley. After completing the "first American house in Nevada" they crossed over the Sierras and bought their suplies, also provisions to sell to the immigrants. Returning, they sold out the cargo and made a second trip to California before winter. None of these men were miners, but Beatie, the founder of this first trading station, says in his manuscript narrative, in the Bancroft Library, that in 1849, while he was in California buying supplies, one of the men left at the station washed out a little gold in the gulches near Carson Valley. On his second trip the news was told to some Mormon miners, and in the spring of 1850 men crossed the Sierras to prospect for placers.

But the real beginning of placer mining was early in 1850, when a Mormon emigrant train on the way to California camped in Carson Valley to recruit their animals, and several of the party made a prospecting tour along the river and its tributaries. Near the site of the present town of Dayton, at the mouth of Gold Cañon, they found gold, though not in large quantities. The details of this discovery are interesting. On May 15th William Prouse "took a tin milk pan, went down to the creek, and washed out a little of the surface dirt." If there had been any prospectors in the party the riches of Gold Cañon would have been discovered in a short time from this clew, but the Mormons only saw the ashen-hued, barren land which they were anxious to leave; they went on, but found the great Snowy Range, as they called the Sierras, still impassable, and so they turned back to their former camp. John Orr and Nicholas Kelly now named the ravine

Gold Cañon, and they spent three weeks looking for the precious metal. On June 1st, Orr "thrust a butcher knife into a crevice at the edge of a small cascade" and pried out a nugget worth perhaps ten dollars. A few days later the whole company packed up and crossed the Sierras.

Whether Prouse and Orr told others or not, the news of the discovery somehow crept abroad. In August some immigrants camping in the valley saw a train of Mexicans with mules and wooden bowls, provisions and miners' tools, crossing the hills to Gold Cañon. Two American boys among the immigrants followed the Mexicans and found that Don Ignacio Paredes was the chief, and that the party was originally from Sonora, Mexico, but had recently come from California. Provisions were so costly, however (flour being $1.50 a pound), that several small groups of miners who tried to work the Gold Cañon placers abandoned the region in 1850. Nevertheless, this discovery led in time to the discovery of the Comstock lode, for Gold Cañon heads far up the side of Mount Davidson, and the metal it contained came from the wash and overflow of the great fissure vein.

Congress had meantime refused to accept the desired Deseret boundaries, but Utah Territory, as organized September 9, 1850, extended from the Rockies to California, including the whole of what is now Nevada. The latter region soon became known as Western Utah, and, separated as it was from the Salt Lake Valley by mountains and deserts, it presented serious problems to the Mormon leaders. Many of the settlers they sent out crossed into the California placers, or became slack in their allegiance to the Church. Every effort was made to establish permanent settlements and gather farmers about the rude trading posts, but the load-



Sutter's Mill.
From a Print of the Time.

stone of the mines was too strong, and by the autumn of 1850 all the Mormons who were not swinging rockers in Gold Cañon moved on to California, while Indians burned the deserted cabins.

Another attempt to hold the country was made in the spring of 1851. Colonel John Reese, leading a well-equipped party of colonists into the upper Carson Valley, re-established a trading post on the site of the first Mormon station. They bought a piece of land from Captain Jim, the Washoe chief, for two sacks of flour, and made a fifteen-foot stockade of cottonwood logs, inclosing an acre. Inside of this they constructed a log house as a fort, trading post, and dwelling, the only permanent dwelling in Western Utah. One would think that now, at last, the Mormons had a good foothold.

Nevertheless, the newcomers soon felt the spirit of speculation. First one, then another strayed up Gold Cañon, and in a few months most of them were in the camps. One of these was a feather-brained, bibulous teamster, whom Reese had picked up in Salt Lake—James Finney, or Fennimore, afterward widely known as "Old Virginia," and one of the discoverers of the Comstock lode. Captain Reese's expedition, from which so much had been expected by the Mormons, had done little except to bring still more miners into the country.

The scattered placer camps of Western Utah at this period were very simple in organization. None of the miners acknowledged any Mormon officers. Their rude and brief laws respecting claims were similar to those of the California placers. Rockers and long toms were used. In the autumn and spring there were sometimes two hundred men in Gold Cañon, but by June of each year water was scarce and the place was nearly deserted.

Then the miners went down to Mormon trading posts and spent their money.

We have from pioneer chronicles a picturesque glimpse of life near one of the camps of the period. It was on the last night of the year 1853. There was a dance "in the log house, over Spafford Hall's store," at the mouth of Gold Cañon. Nine women were there, including a girl of ten, and one of the nine was Princess Sarah Winnemucca, the only Indian woman who mingled socially with the whites. The men numbered over frontier store keepers, there were miners from the gulches—Oregonians, Californians, apostate Mormons, and winter-bound immigrants—every stroke of whose picks brought the day nearer when mining men should rule Nevada. All night long the dance continued in Spafford Hall's log house, and while the festivities were at their height the Washoe Indians stole every horse in the settlement.

The Mormons in 1856 made their last efforts at aggressive colonization, sending sixty to seventy families to Carson Valley, and smaller parties to other portions of Nevada. Arriving before local elections, and being well organized, they placed Mormons in nearly every office. The miners held squatter meetings, and began to talk about secession from Utah. While things hung thus uncertain, Brigham Young, in 1857, suddenly abandoned the struggle, partly because Salt Lake had trouble of its own, partly because the astonishing growth of California seemed to nullify all his efforts along the eastern base of the Sierras. He sent out messengers, and peremptorily recalled every Mormon in Western Utah. Some fifty-four families in Carson Valley left their cabins, sawmills, claims, water ditches, and property of every sort, giving it away or selling at a ruinous sacrifice, and returned to Salt

Lake. The entire number of Mormons who left Western Utah was four hundred and fifty, in one hundred and twenty-three wagons, and they were on their way to Salt Lake within three weeks after the mounted messengers arrived with the commands of the Prophet. Some of the little settlements were nearly depopulated for a time, until "gentiles and apostates" had filled the vacant places.

Orson Hyde, the apostle, years later, when the Comstock miners had made all Nevada property extremely valuable, wrote to the then owners of a sawmill he had built in "Wassau," now Washoe Valley, saying that unless they restored it at once (which they never did) the curse of the Almighty would utterly destroy them. "This demand of ours remaining uncancelled shall be to the people of Carson and Wassau Valleys as was the Ark of God among the Philistines. You shall be visited of the Lord of Hosts with thunder and with earthquakes, with floods, with pestilence, and with famine, until your names are not known among men."

Carson County, thus abandoned by the Mormons, was for a time left without a government. Great Salt Lake County, eight hundred miles distant, claimed jurisdiction for "election, revenue, and judicial purposes," and was ordered by the Utah Legislature to take possession of all the records and documents. The people then drew up an earnest memorial to Congress. Even in the summer time, they said, they were destitute of all power of enjoying the benefits of the governments of Utah or California, while in the winter communication was frequently cut off for several months. "Outlaws, criminals, and convicts abound, and the region is only saved from anarchy by an occasional session of Judge Lynch's Court."

The placer miners in Gold Cañon were entirely in-different to the departure of the Mormons. They worked on, washing auriferous gravel from the bars, or carrying rich earth from dry ravines to the nearest stream. They lived in little brush huts, or tents, in summer, and in cabins of rough stone in winter. Gambling and drinking were the only amusements. The work was very hard and monotonous. Often men hardly made a living. Until a mill was built in Carson Valley, the price of flour was apt to go very high in the winter—as high as two and a half dollars a pound. By 1855 this price had fallen to fifteen cents, and potatoes, which once sold for a dollar a pound, could be had for five cents.

At times the miners suffered greatly from lack of the necessaries of life. One winter many Gold Cañon miners were without boots. All that were obtained had been carried across the Sierras by the famous "snow-shoe Thompson" on his Norwegian snow-skates. He often took one hundred pounds upon each of his journeys between Placerville and Carson, which he made in three days one way and in two days the other. To add to the miners' discouragements, the placers were nearly worked out by 1857. In the years between 1850 and 1857, inclusive, the total number of miners at work in Gold Cañon had varied from twenty to two hundred. During this time the average of the daily earnings of each miner had diminished from more than five dollars to about two dollars. The annual yield of the placers, which was only $6,000 in 1850, rose to $118,400 in 1855, and then sank in two years more to but $18,000.

When the last year of the '50's began, Western Utah still remained a comparatively unknown region, and its pioneers were losing hope. Trade had departed with the close of the placer-gold period of California.

In 1854, three hundred wagons had passed Mormon Station in six months; by 1858 hardly one tenth of that number went by this route. Most of the scattered trading posts—mere tents pitched in the desert to meet the pilgrims—disappeared, and their owners were on cattle ranches or running saloons in gulches whose placer gold was fast becoming exhausted. Nevada seemed to be a "played-out country."

CHAPTER IV.

THE PLACER-MINING PERIOD.

In the midst of the Carson and Washoe country are the Washoe Mountains, lying east of the Sierra Nevada and nearly parallel to that great mountain chain. A series of small alpine valleys separate them from the Sierras. The highest peak of this world-famous metalliferous mountain range is 7,827 feet above the sea and lies in the midst of a cluster of mountains of especial interest to the geologist and the miner. Gold Cañon, with its little stream, heads far up on the south side of the peak and extends to the Carson River. Other small streams head upon the north side of the peak and flow east through Six-Mile and Seven-Mile Cañons, reaching the Carson after many devious turns. The early miners, hidden deep in narrow cañons, knew it as Sun Peak, but after the Comstock discovery it was named Mount Davidson.

Here, in these barren mountains, within a semicircle of less than ten miles radius from the top of Mount Davidson, was the scene of some of the most typical and stupendous mining developments of which the world has any record. But the tale, of which this is but the foreshadowing, still belongs for a little time to the placer miners of the early '50's, not to the Nevada heroes of '59.

Pushing up the gulch, the miners founded the little village of Johntown, which was situated in the ravine four miles above the first trading station at its mouth. Between 1851 and 1858 Johntown was considered the centre of the mining activities of Western Utah, although it never contained more than a dozen shanties, as most of the miners lived on their claims, in tents, or "dug-outs." The old camp at the mouth of the cañon became known as Chinatown, because by 1856 the claims in its vicinity were occupied by Chinese, and sometimes nearly a hundred of them were at work there. The Americans left in the camp made violent objections to having their settlement known as Chinatown, and so they called it Mineral Rapids, afterward Nevada City; finally it became Dayton, and so remains.

The mining region had two rather curious newspapers soon after 1854. One, the Scorpion, was published at Mormon Station; the other was the Gold Cañon Switch, published at Johntown. Both were written on sheets of foolscap, and were passed from hand to hand up the gulch until they reached the most distant prospector in the range.

Johntown, in the days of its glory, was a great place for the game known among pioneers as "bucking the tiger," or "wrastling with the beast of the jungle." "Jacob Job, the leading merchant," says Dan De Quille, "used to give the boys all the faro they could take care of, and often a good deal more." He dealt "out of hand," never using a faro box. Old Billy Williams, of Carson Valley, another enterprising gambler, came into Johntown with the card game of "Twenty-one." A few days of free-hand faro and Twenty-one during the Christmas holidays generally sent all the luckless and reckless Johntowners back to toms and rockers, each man "a total financial wreck." Johntown in those days had also a Saturday-night ball every week at "Dutch Nick's saloon," and the three white women in town, together with Sarah Winnemucca, the Piute princess, made up the set.

In 1857 some prospectors found gold in the clay of Six-Mile Cañon, a deep ravine that heads on the north side of Mount Davidson, while Gold Cañon is on the south side of the same mountain. All the gold in both cañons had been washed down from the decomposed outcroppings of the great mines, as yet undiscovered. From two opposite directions the placer miners were now unconsciously approaching the source of their gold. Tradition states that a wandering Mexican who worked a few days in Gold Cañon tried to tell the miners that among the mountains high above their heads was "mucho plata," "mucho bueno plata," but his anxiety to have them prospect there for silver mines was not understood till several years afterward.

Looking back on the situation, it certainly seems strange that so much ignorance prevailed. In modern times every miner who finds placer gold or loose mineral of any sort, known technically as "float," looks at once for its sources. But the early prospectors in the Mount Davidson cañons were typical miners of their period; nearly every one in the Western country was then equally ignorant. They were so entirely unsuspicious of the existence of the great Comstock lode, or of any silver-bearing rock, that when the quality of the placer gold they obtained deteriorated as they ascended the cañons toward Mount Davidson, they could not understand the reason. It became lighter in colour and less in value, because it was mixed with a percentage of silver, and this percentage increased until the bankers in Placerville, California, who bought their gold dust, would only pay thirteen dollars an ounce where they had formerly paid eighteen dollars.

Among the men who were mining in the ravine when Johntown was in its glory were several who especially belong to the narrative. James Fennimore, or "Old Virginia," the bibulous, disreputable, and amusing teamster of Reese's expedition of 1851, represented about the average of the class to which half a dozen familiar Comstock names belong—Peter O'Riley, Patrick McLaughlin, Emanuel Penrod (known as "Manny"), Jack Bishop, Joe Winters and loud-spoken Henry Thomas Paige Comstock, known as "Old Pancake," because he always thought himself too busy to make bread. "And even as, with spoon in hand, he stirred up his pancake batter," says Dan De Quille, "he kept an eye on the top of some distant peak, and was lost in speculations." Comstock seems to have been a curious combination of shrewdness, vanity, ignorance, and spasmodic energy. Born in Canada early in the century, he had trapped and traded for many years, beginning in Michigan and ending in New Mexico, from which region he went to Salt Lake and drove a flock of sheep to "Western Utah" in 1856, sold them, and began mining in Gold Cañon.

CHAPTER V.

THE FIRST QUARTZ PROSPECTORS.

MEANWHILE, in the closing years of the decade, the most thoughtful and intelligent prospectors who lived in Washoe, two brothers, named Ethan Allen and Hosea Ballou Grosh, the sons of a prominent Universalist minister of Pennsylvania, were steadily at work searching from cañon to cañon for silver, gold, and other minerals. No one else in all that region was so well equipped for the prospector's work, none better deserved success, and none were so unfortunate. Among the many dramatic chapters of the story of the Comstock, nothing surpasses in human interest the simple story of these two miners.

Much that has been written about the Grosh brothers and the "first discovery of silver" is mere tradition and hearsay; in fact, their story has never been given its rightful place in the history of Nevada. I have been fortunate in securing from Dr. Richard Maurice Bucke, of London, Ontario, the loan of a manuscript account of the Grosh brothers, which for the first time makes a connected narrative possible. Dr. Bucke—their faithful friend and chronicler, who begins his narrative with: "In the summer of 1857 Allen and Hosea Grosh, George Brown, and the writer were mining in Gold Cañon"—appears in other records of the time as "the young Canadian prospector."

Leaving the mines after the experiences to be told in this chapter, he studied medicine, has been for years at the head of an insane asylum in Canada, and is known in literature by various essays and by his life of Walt Whitman.

Dr. Bucke describes the Grosh brothers as of medium height, slight in figure, good-looking, fairly well educated, very quick of observation, ready with expedients, gifted (especially Allen) with exceptional powers of original thought, thoroughly honest and honourable, absolutely devoted to each other, industrious, persevering, chaste, sober, and, above all, "filled with that genuine religion of the heart which is the salt of the earth." They went to California in the "schooner Newton expedition," leaving Philadelphia in February, 1849, endured more than ordinary hardships, reached the placer mines of El Dorado County, found little gold, and in the summer of 1853 reached the Western Utah camps.

They worked in Gold Cañon until the autumn of 1854, making only a bare living, then returned to California to prospect for quartz, but still without success. They were always working hard, but they never seem to have known anything except hard times. They just made enough to keep themselves going. Nevertheless, they never lost courage, and they hoped for better days. Writing home from California to their father (March, 1856), they give the first hint of Nevada silver:

"Ever since our return from Utah we have been trying to get a couple of hundred dollars together for the purpose of making a careful examination of a silver lead in Gold Cañon. . . . Native silver is found in Gold Cañon; it resembles thin sheet-lead broken very fine, and lead the miners suppose it to be. . . . We found silver ore at the forks of the Cañon. A large quartz vein shows itself in this situation."

They did not obtain the two hundred dollars, but managed to reach Gold Cañon with great difficulty in September, and, as they soon wrote, "found two veins of silver at the forks of Gold Cañon. . . . One of these veins is a perfect monster. . . . We have hopes, almost amounting to certainty, of veins crossing the Cañon at two other points." Then they went back to California to try to earn a little more money, but failed completely. "We have had very bad luck," writes Allen.

In June, 1857, writing from Gold Cañon, Allen Grosh gives more particulars of their discoveries: "We struck the vein without difficulty. . . . We have followed two shoots down the hill, have a third traced positively, and feel pretty sure that there is a fourth." Their letter contained a diagram which certainly resembles the south-end Comstock ledges. They continue: "We have pounded up some of each variety of rock and set it to work by the Mexican process . . . . The rock of the vein looks beautiful, is very soft, and will work remarkably easy. . . . Its colours are violet-blue, indigo-blue, blue-black, and greeenish-black. It differs very much from that in the Frank vein—the vein we discovered last fall." A few weeks later they write that the first assay gave results of $3,500 per ton. This amount seemed to them impossible; but everything in the above memoranda confirms the idea that they had really struck the Comstock lode. Additional evidence is afforded by the story that one of their friends, Mrs. Ellis, who was to furnish some capital with which to open a mine, was told by them that their largest ledge was on what is now Mount Davidson, and she had a piece of ore containing "gold, silver, lead, and antimony," which description would very well apply to Comstock outcroppings. A button of silver extracted from ore of one of their claims was shown to Dr. Bucke by Allen Grosh in 1857. One claim was the "Pioneer," another the "Old Frank," and a third the "Utah Enterprise."

Some remarkable references to the discoveries made by the Grosh brothers are given by a recently found manuscript written by Francis J. Hoover, a pioneer of '49, who died in San Francisco some thirty years ago. It is called A True History of the Discovery of Silver in Washoe, then Utah, now the State of Nevada, and is dated September 9, 1863. The story it tells is that in July, 1853, Frank Antonio, the "Old Frank" after whom the Grosh brothers named one of their mines, went from El Dorado County, California, with five others, to prospect in Western Utah. He had a horse stolen, and while searching for him "on a table-land running north and south and broadside to the sunrise" he found rich silver ore, which he knew, having worked in the silver mines of Brazil. He kept the specimen after he returned to California, and tried to interest men in the subject, but long without success.

Frank Antonio, the Hoover manuscript proceeds to say, then told the Grosh brothers, who had been mining in Gold Cañon, about his discovery of silver ore in that region, and finally helped them to organize the "Frank Silver Mining Company," composed of nine members, mostly Californians. In 1856 the Grosh brothers found what they supposed to be the main ledge, and located four hundred feet for each member of the company. This, Mr. Hoover believes, was along the axis of the Comstock lode. The first claim notice, he says, was posted on what is now the Ophir, and another was on Gould and Curry ground.

But the Grosh brothers had no capital and few friends. They were compelled to work on the nearly exhausted placers of Gold Cañon in order to live from day to day. There is a story to the effect that a stockman and trader named Brown, at Gravelly Ford, on the Carson, had agreed to supply funds, and that they wrote him about their "monster vein." Selling out, he was about to join them, when some desperadoes murdered him. Meanwhile Hosea crushed his foot by a glancing blow of a heavy pick some time in August. He had poor food and was worn out with overwork. Blood poisoning set in, and on September 2d he died in their rude cabin of unhewn stones at the mouth of American Flat Ravine.

Dr. Bucke's manuscript says: "At the time of Hosea's accident they were about even with the world, were not in debt, and had nothing in hand. When Hosea was buried, Allen found himself some sixty dollars in debt." Allen had determined to cross the Sierras to California and interest persons of means in the silver claims. Although every day was now precious, as it was often dangerous to cross the mountains after October, he worked in the placers until he paid his debt, which took until the middle of November. Dr. Bucke also desired to go to California, and the two, loading a donkey with books, papers, clothes, blankets, and some provisions, started together upon one of the saddest of journeys.

Already it was snowing in the Sierras, and their donkey straying back at night, lost them four days more. It was November 20th before they left Washoe Valley to take an Indian trail which crossed the eastern ridge of the Sierras some nine thousand feet high, thence descended three thousand feet to Lake Tahoe, went up the main ridge of the Sierras some eleven thousand feet high, and followed the long western slope into the California mining camps. The total distance from the last pioneer cabin of Western Utah to the first cabin occupied in winter in California was about a hundred miles.

Snowstorm after snowstorm overwhelmed them, preventing return, and finally, in Squaw Valley, near the top of the western ridge, a white, relentless wall surrounded them on every side. It rained, and grew colder, then snowed heavily. They made several futile attempts to cross the ridge with the donkey, exhausted their provisions, killed the donkey for food, whittled out some rude snowshoes, and on November 28th started over the soft snow. They climbed for hours, but took the wrong trail, and were compelled to return to Squaw Valley. The next day they managed to cross the summit, and reached a small summer cabin used by cattle men known to Dr. Bucke. Here they expected to find some flour and bacon, *cached* several months before, but Indians had taken everything. It snowed heavily, and they staid in the cabin until their donkey meat was nearly gone; then they started down the mountain sides. The snowshoes were useless; they kept finding and losing the trail, and circled on their own tracks. The damp had spoiled their matches and gun. They threw away everything they could—even Allen's papers—and ran for their lives. At night they burrowed in the snow for warmth; their clothes were constantly wet. It still snowed, and their strength began to fail. On December 3d they made only ten miles. That day and the next they wandered about the rugged cañons along the Middle Fork of the American. On December 5th they were still weaker. Dr. Bucke writes: "This afternoon, when exhausted and despairing, I sat down and, weeping, proposed to give up and lie down and die where we were. Allen said, 'No, we will keep going as long as we can walk,' . . . and so after a little he persuaded me to make another effort."

On December 6th they were barely able to crawl along, often on hands and knees. They made about three quarters of a mile by noon, when they came upon the ditch and log cabins of Last Chance Mining Camp. "We were no longer hungry," writes Dr. Bucke, "and when food was offered us we found we could not eat. Our feet were badly frozen. We could not sleep. We got worse and worse. After a few days we became delirious. On the twelfth day after we reached the camp Allen died."

Thus three young men, friends and fellow-workers, who were interested in the development of Nevada ledges, had all perished—Brown by violence, Hosea Grosh by accident, Allen Grosh from exposure to the Sierra winter. Dr. Bucke, crippled and for a time broken in health, abandoned the life of a miner and returned to Canada. If Allen Grosh had lived a few months longer the whole story of the Comstock would probably have been different, and its earlier fortunes less chaotic. By his death the possession of the great Comstock lode was left to others, ignorant and undeserving—the heedless rabble, even then swearing loud oaths at the unknown metal that clogged their sluice boxes. None of the Californians whom the Grosh brothers had interested in their quartz ledges made any immediate effort to take possession. In fact, the clew was lost.

The Comstockers themselves have always credited the Grosh brothers with having taken at least the first steps toward the great discovery, and there is a growing belief among those who have studied the subject that these two men deserve to be remembered as the true pioneers of the district. In 1865, when Schuyler Colfax visited Virginia City, he presided at the ceremony of erecting a commemoration tablet over the grave of Hosea Grosh in the little Silver City cemetery. It still remains for the commonwealth of Nevada to search for the lonely grave of Allen Grosh in the Sierras, and then to bring the remains of the brothers together at the foot of Mount Davidson, under a shaft of Comstock porphyry on which should be written, "They were the First Quartz Prospectors on the Comstock."

Returning to the Grosh cabin of 1857, we find another thread of the main story. When the surviving brother, Allen, went on that fatal journey to California, he cast about for some one to leave in charge of his effects. Comstock seemed the most available. It is said that a written contract was drawn up; Comstock was to have a one-fourth interest in one claim for keeping it from being jumped in the absence of Grosh, and was to live in the little stone cabin. He does not seem to have been taken any further into Allen's confidence. Both the brothers were very cautious and secretive; but this claim, which was somewhere around the head of Gold Cañon, was now staked out, and known to many, so Allen probably thought it better to give Comstock a share than to have him persuade his associates to take possession. It is in perfect accord with what we know of these admirably equipped young prospectors to suppose that both the brothers understood Comstock thoroughly, and that they told him nothing of their "monster vein," the Comstock. The usual story is that Allen secretly *cached* his assaying tools and memoranda of their discoveries before Comstock was brought to the cabin, but Dr. Bucke's narrative shows that he threw all his papers away in the Sierras. Long after Allen's death, when his heirs and his former associates in California searched for evidence to bear out their claims in court, little could be found. Did Comstock obtain the clew in some neglected paper in the Grosh cabin? Or did he live all winter in the rude stone hut where two brave, silent prospectors had lived in poverty, fighting slowly and intelligently toward one of the greatest fortunes ever lying before treasure-seekers—and did he only dream wild dreams and go back to his placers the same haphazard "Old Pancake"? Was the rediscovery of the Comstock wholly an accident? The reader must judge for himself in the light of Comstock's behaviour during the early months of 1859—the days of Gold Hill and Ophir.

CHAPTER VI.

DISCOVERY OF THE COMSTOCK.

THE last year of real placer mining in Nevada was 1858, and long before its close the very air grew full of hints of change and growth. Dull of comprehension, ignorant of their position upon the verge of an unsurpassed mining excitement, the seventy-five or eighty men now working in the very tops of the ravines east and south of Mount Davidson were nevertheless beginning to feel the thrill and presence of the spirit of discovery. For the first time in years there was talk of prospecting parties throughout the district to look up better claims.

Johntown was again the centre of activities in the winter of 1858–'59, for the weather was unusually cold, freezing the water in the gulches, so that the miners had a season of enforced idleness. They spent it in discussing the situation, which certainly contained elements of pathos and sarcasm. Nearly all the Johntown miners of 1858 were men who had been in the region for six or seven years. The only change in their occupations had come about as the character of the "diggings" changed. At first they had mined on the "bars," then on the "flats," then on the sides of ravines, ascending toward higher ridges. The ordinary auriferous gravel became of darker colour; the soil of the hills was heavier and heavier clay, though still containing gold. The ground was difficult to handle—

full of what they called " sand of iron " and a substance they called lead, and a " heavy blue stuff " that carried off the quicksilver. Sometimes a miner, after working all day long, from sunrise to dark, would go home with his back aching from the labour of cleaning his sluice box every few minutes from the " accursed base metal " that clogged every riffle. Down it was thrown, with fierce maledictions, to the bottom of the ravine.

Our story follows the fortunes of a little group of Gold Cañon miners—John Bishop, known as "Big French John," Aleck Henderson, Jack Yount, and " Old Virginia." One day, about the 20th of January, while they were on the ridge immediately east of the cañon in which the town of Gold Hill was afterward situated, " Old Virginia " pointed across to a small, low mound, and said, " Boys, I believe that some good diggings are waiting for us there."

" Let us go and try it," one of them answered.

" Some other time, boys; it's a deep gulch, and late in the day."

The " other time " came on a Saturday, January 28th, when the four men went to the mound as agreed upon. Bishop, who had a shovel, pushed it full of earth with his foot. " Old Virginia " found a gopher hole, and took a panful from the loose earth brought up from a foot or two underneath. They went down to a spring, and, washing it out, found gold. They immediately staked out four placer claims of fifty feet each, the limit allowed by the mining law in that district. " Old Virginia," who was held to be the discoverer, took the first choice.

According to nearly every account of the real discoverers, Comstock only " came in afterward " ; but his own narrative claims entire priority and pre-eminence. " About the middle of January," he says, " I saw some queer-looking stuff in a gopher hole. I ran my hand in and took out a handful of dirt, and saw silver and gold in it. Big John Bishop and Old Virginia were with me. When I found it they were sitting on the side of the hill a couple of hundred yards from me. I took up five claims."

The day after the discovery all the Johntowners came over to the little mound and passed their opinions upon the new diggings. The place was so small that most of them thought but little of the camp. However, it had to be named, of course, and that was always a difficult task. The fortunate or grotesque names of camps have come by accident; when the miner attempts deliberately to give a title to the place, his imagination generally fails him. It was so in this case. Cañon-town, Gold-town, and finally Gold Hill were the principal suggestions, and the latter was adopted, because, according to the naïve explanation of Big French John, "it was decidedly not Gold Cañon."

In a few weeks the miners on Gold Hill ran into "pay dirt" that was surprisingly rich for the district. They actually took out from fifteen to twenty-five dollars a day to the man. They were working in the detritus of the south end of the Comstock, Nature's own concentration of many feet of outcroppings, worn down and mixed with wash from the peaks of the Washoe Range. Great mines of the future—Belcher, Crown Point, Yellow Jacket, Imperial, Kentuck, Empire, and others that yielded immense sums a few years later—lay hidden in the solid quartz and vein matter that began hardly ten feet beneath the surface.

Old Virginia had taken up a spring in the ravine, but all the miners used it without rental. The dirt picked out from their respective claims was carried down to the water's edge and washed there, old-style rockers being used. Pretty soon they had to pound the earth up with a pick handle, it grew so hard as they dug deeper into the hill. It contained plenty of the same "blue stuff" that had worried the miners in Gold Cañon, but they were becoming used to it by this time, and, besides, the claims were paying better than anything else in the mountains.

The most of Johntown moved there, abandoning the shanties in Gold Cañon, and Gold Hill soon had a store, a saloon, and a cheap restaurant. "Brush huts and a tent lodging-house among the sage brush" was a writer's description. Every one was pleased with the change except the Carson Valley ranchers, whose pack mules, loaded with eatables to be sold to the miners, had to travel farther and climb much higher.

Prospecting continued throughout the early months of 1859. Those who were not mining upon Gold Hill took pick and pan whenever they had a day to spare, and tried in vain to make wages in the gulches. Sometimes they found strange "stuff" that was not gold, and very small deposits of the precious metal—"pockets" in the hillside that yielded twenty or thirty dollars before they were exhausted. This aimless prospecting went on for several months, every one looking for another Gold Hill.

The real point of interest had shifted to the head of Six-Mile Cañon. Two Irish miners—Peter O'Riley and Patrick McLaughlin, long among the best known of the Johntowners, and old-time comrades—had been unfortunate in their recent ventures. Comstock said afterward that he was paying them wages at this time, and that they were working on his claims, but in fact they had determined to go to the Walker River Mountains to some new placers of whose richness many stories were told, and would have started at once, but

Hydraulic Mining.

had no money. It was necessary to dig it out of the ground, so they agreed to try one more claim in Six-Mile Cañon, and then leave for Walker River as soon as they had a hundred dollars "for a grub stake."

The only piece of unoccupied ground that seemed at all promising was on the hillside above all the other claims in the cañon, near a spring known as "Old Man Caldwell's," where some one had made a short sluice box for mining, but had evidently thought the spot unprofitable. They used rockers for a fortnight upon their claim, carrying the dirt to the spring, but the ground was hard, and paid them less than two dollars apiece for a long day's work. Remembering the inexplicable location of the Gold Hill diggings on the top of a mound, and guided in some degree by the colour of the soil, they now started a trench straight up the hill, in hard blue clay and yellowish gravel.

The little spring wasted down the slope, and they thought it would be a good plan to dig a pit in the clay so as to reservoir a few barrels of water. They began this early in June, and here, at a depth of four feet, they came upon a deposit of the same sort of dark heavy soil that had been found at Gold Hill. It was even darker, and sparkled with minute flakes of gold. Running swiftly to the mining trench fifty feet distant, one of them brought a pan and tested the new find. The bottom of the vessel seemed fairly covered with precious metal as soon as the gravel, clay, and "black stuff" were stirred up and allowed to slide over the edge.

This was the top of the world-famous Ophir, the north end of the Comstock. The main masses of the mighty fissure vein extended in parallel lines of fragmentary projections from the black mound of the Ophir south to the black mound of Gold Hill. At some remote period, ages before, the great lode had risen hundreds of feet higher; uncounted centuries of chemical and physical action had worn and broken it until thousands of tons of the hardest of quartz was as soft as clay and as fine as sand. This is what miners mean by "decomposed quartz"; it can be panned out or washed in a rocker, long tom, or sluice box.

O'Riley and McLaughlin shouted with delight; they had found another group of rich placers, alloyed, to be sure, with the same base metal that made their gold so hard to sell to the bankers, but still as good as the best in that district. No more notions of Walker River; they began mining in desperate haste, first sticking up a claim notice of fifty feet apiece. By sunset they had two or three hundred dollars in hand, and a black streak of what all the miners considered "bogus stuff" began to extend down the slope.

Comstock made his appearance just as they were finishing the last clean-up for the day. He had been looking for his lost mustang, and now came galloping down the ridge, with his long legs dangling in the sage tops. He came up in a state of great excitement and shouted: "You have struck it, boys!"

Jumping from his horse and leaping into the excavation, he made a rapid examination of the prospects. Then turning to the two warm-hearted and good-natured miners, he told them in a voice of genial and confidential friendship that unless they managed the matter carefully they could never hold the claim. The three men sat down on the bank to talk it over.

"Look here," said Comstock, "this spring was Old Man Caldwell's. You know that; there's his sluice box. Well, Manny Penrod and I bought his claim last winter, and we sold a tenth interest to Old Virginia the other day. You two fellows must let Manny and I in on equal shares."

O'Riley and McLaughlin objected strenuously at first, but they were a little afraid of Comstock, and, besides, fifty feet of a placer claim was more than they could work in a season; it did not amount to much, after all. So when Comstock added, by way of a clincher to the argument, that five persons, of whom he was one, had once located one hundred and sixty acres upon the bench as a stock range, and he thought they were within its boundaries, they gave up like lambs and agreed to everything that Comstock proposed.

It is a curious illustration of the free and easy life of the time that O'Riley and McLaughlin did not demand any proof of Comstock's statement. In reality, his claims to the spring had some colour, as he and his friends had used it, though no water-right was ever recorded. He might possibly have posted a mere notice on the "stock range," but it could only hold for ten days, as he never paid any fees nor occupied the tract. Every miner who owned a horse turned him out on the unfenced hills.

Now, and most unexpectedly, occurred the first "freeze-out" on the Comstock. Hitherto the miners had dwelt together in a sort of Arcadia, under their own laws, and were fairly just to each other. Comstock introduced a new deal. Having provided for himself and Manny Penrod, he went on to Gold Hill before the news of the strike reached that place and bought out Old Virginia's tenth interest in Caldwell's spring for the mustang he rode. Subsequent tradition adds the picturesque and very probable item of "a bottle of whisky."

Penrod's testimony is: "We thought it was a continuation of the placers that had been worked lower down" (at Gold Hill). "There was about six inches of pay dirt; it increased as we went up the hill. On June 12th the pay streak turned and went down into a ledge." This fixes June 12th as the date of the actual discovery of the Comstock. It caused no excitement, however, but was a source of regret, as it seemed to show that the diggings would soon be exhausted.

Comstock's own account of the whole matter is so artistic a piece of braggadocio that it must be quoted in order to round the narrative: "I had owned the greater part of Gold Hill; had given Sandy Bowers, Joe Plato, William Knight, and others their claims there. At Ophir, O'Riley and McLaughlin were working for me. I caved the cut in and went after my party to form a company. With my party I opened the lead and called it Comstock lode. We started to rocking with my water. I continued owning the claim, locating 1,400 feet for myself for the use of my water to the company." Comstock goes on to explain how he acted as good angel to the camp, and gave rich mines away right and left. "I located the Savage claim—showed the ground to Old Man Savage. I located the Gould and Curry—went into the valley and got old Daddy Curry to come down, and put him in possession."

The little drama was in truth very simple. Comstock, one of the most ignorant and bombastic of men, had managed by loud talk and pure impudence to make himself the most important personage of the epoch. He had never really found anything, but he claimed everything in sight. In a few weeks, when miners came from all points of Washoe, the most important man in the region was thought to be Comstock.

CHAPTER VII.

PLACER MINING ON QUARTZ LEDGES.

Again the real problem presents itself to the discerning reader—When will these stupid people find out their own good fortune? Not until it is crammed down their throats, like a dose of quinine. That is already evident to any one who has followed the amusing career of this Peterkin family of stumbling prospectors, whose Dunciad of woes regarding troublesome silver float all the way up the gulches from Johntown has been almost beyond belief. The Grosh brothers, even admitting that their "monster vein" was some other ledge than the Comstock, would not have waited five minutes after the Gold Hill discovery before they had filed on the main lode for gold- and silver-bearing quartz, and in an hour they would have been sinking a shaft. Not so was it with these earliest Comstockers, who were mere survivals, mining autochthons of the placer-camp age.

Midsummer of 1859, therefore, became the placer period of the Comstock. The surface was rich beyond the wildest dreams of wandering Washoe prospectors. The steady thud of Johntowner picks, the swish-swash of their rockers, was heard at last in the midst of *débris* from outcroppings of the greatest mineral deposit in America. The miners were literally sleeping upon mounds of gold and silver. But even at this late moment, when the news of their discovery was speeding over Sierras and Rockies to men who were wise enough to read the secret of the "sand of iron" and the "hard blue stuff" at a single glance, O'Riley, McLaughlin, Comstock, Penrod, and the rest were every day taking out from five hundred to one thousand dollars in gold to each man at work, and were throwing away several times as much in silver. Not one of them was able to rise to the occasion. The myriad-sided hints of the past had been wasted upon these fools of fortune.

Some local excitement occurred, of course. Ranchers came north from Eagle and Carson valleys, east from the lands about Washoe Lake, south from the Truckee meadows. A few herdsmen and prospectors arrived from the desert. Scattered miners in the gulches abandoned their claims and hastened to Comstock's diggings. But from all these sources not more than a hundred persons entered claims that summer along the lode or near to it. Talk of quartz was occasionally heard, but only of gold quartz; and as the deposit became more solid, cheap Mexican *arrastras*, run by mule power, were erected to grind lumps that were too hard to be broken with the handle of a pick.

Comstock was exuberantly happy for a few weeks. His Indians did most of the work, and all he had to do was to watch the sluice boxes and take visitors around. A party of ladies from Carson Valley were upon the claim in July, and, as is the custom in placer camps, each lady was offered a "pan of dirt" by Comstock, being expected to wash it out and keep the gold as a memento. The pans would have averaged forty or fifty dollars apiece, but Old Pancake had taken a fancy to one of the number, and so he slipped in a large handful of "dust," giving her, as tradition states, more than three hundred dollars. Comstock was wildly avaricious when mining, and as wildly extravagant with his gold when obtained. He bought whatever took his fancy, and gave it away the next minute. His only pleasure seemed to be the spending of money, and most of his comrades were very much like him in this particular.

Pleasant Hill Camp was the first name given to the settlement at Ophir, and some called it "Mount Pleasant Point." Ophir and Ophir Diggings were also names used for a time. By August there were a dozen tents, dug-outs, or shanties on the present site of Virginia City. The name Winnemucca was then suggested as preferable to the earlier titles; but one midnight Old Virginia, going home with the boys and a bottle of whisky, after an unusually protracted revel, fell down when he reached his cabin, broke the bottle, and rising to his knees, with the bottle-neck in his hand, hiccoughed, "I baptize this ground Virginia Town!" A reveller's shout arose, and it was decided to return to the saloon and celebrate the new name for the rest of the night. It took at once, although "town" was soon broadened to "city." Under every one of these titles the place was recognised almost from its foundation as the most important town in Washoe district. Still, there was no hotel, and only one small restaurant. Newcomers brought their blankets and slept in the sage brush on the treeless hillsides.

Gold Hill, it will be remembered, was located by four men, five others coming in later. Only one of the nine managed to retain his interest for any length of time. Old Virginia gave "Little French John" nine feet of his claim. He sold the rest of his claim of fifty feet at fifty dollars a foot. Big French John and the rest sold some time after at prices ranging from fifty to one hundred dollars a foot. Rodgers committed suicide. Old Virginia, while on a spree in 1861, was thrown from a horse and killed. All of the original Gold Hillers speculated, spent the money they made, and died poor, while fortunes were being taken from the ground they had owned.

The North End discoverers were no more fortunate. McLaughlin sold for $3,500, a few years later was cooking for a gang of men for forty dollars a month, died a pauper, and was buried at public expense. Penrod sold for $8,500 toward the close of the year, and soon spent all his money. Osborn, who had obtained a sixth interest in the Ophir by building a seventy-five-dollar *arrastra* for the company, sold for $7,000, and Winters did no better; both men were poor a few years later. O'Riley hung on longer than any one else—even Comstock—and so received $40,000. This he spent in stock speculation, and finally died in an insane asylum.

Comstock himself, who belonged to both camps, was even more typical of his kind. Two months after the ledge was struck he sold all his interests for $11,000. He lost every dollar he had, came back to the Comstock, found better men everywhere, wandered off on lonely prospecting tours in Nevada and the Rockies, and finally committed suicide in Montana. His petty schemes among his fellows, his simple egotism and bombastic lavishness, his brief authority as father of the camp, his failure to seize the unparalleled opportunity, his return to pick, pan, and prospecting horn, his death under the cloud of partial insanity—all these are among the dramatic elements of this strange life history.

So had this group of prospectors remained wholly unteachable, clinging to their folly, rejoicing to be able to sell their claims for comparative pittances.

Like the classic fool of Proverbs, Comstock and the rest of them had been brayed as in a mortar, but their folly remained. These men had in their undisputed possession wealth enough to have made each one of them richer than the late Jay Gould. Comstock, had he risen to the opportunity, might soon have flashed across the skies of London and Paris the greatest speculator of the century, another John Law, running printing presses night and day to supply the demand for Nevada mining stock from claims staked out across Flowery Ridge and miles beyond in the desert. As it was, each one of them believed he was receiving more than his interests were really worth. They had never understood the slowly accumulating evidence pointing to the Comstock lode as a great storehouse of mineral wealth. Others also, who followed them, undervalued opportunity, and yielded in time to the old law of the survival of the strongest, but none could again give so much for so little.

Thus the placer period comes wholly to an end in falsely shrewd bargains. The goddess, so long wooing these stumbling men, tires at last and turns away with laughter in her eyes. Beyond the Sierras, in the forests where the body of Allen Grosh lies, there is the sound of an advancing army, and thither the goddess looks, choosing new favourites. Already those whose day is done are forgotten.

CHAPTER VIII.

THE RUSH ACROSS THE SIERRAS.

THE first news of the mines that was heard west of the Sierras made many persons think that the district contained only shallow placers. Settlers along the eastern slope of the mountains, from Honey Lake to Carson Cañon, did not hesitate, but poured into the new gold region. One of them stood by and saw "the famous Mr. Comstock and Old Gentleman Virginia" take out $1,900 in placer gold in one day.

At Nevada City, California, in the midst of one of the most permanent quartz-mining districts of America, the discovery was made that caused the great silver rush. A plain Truckee farmer named Harrison rode over to the diggings quite early, when Virginia City consisted of only two tents. He saw Long John Bishop and his partners throwing away masses of "blue stuff," and they told him it was worse than useless. Picking up a few pieces, he carried them home, and afterward to Nevada City. The problem had at last reached a set of men who were in the habit of investigating what they did not understand. The two best assayers in the town tested the fateful "blue stuff" and demonstrated that a ton of it was worth $1,595 in gold and $4,791 in silver, or a total of $6,356. This was the base metal so long thrown away by the guileless and ignorant miners of Western Utah! Tons and tons of it were said to be in sight in the "cut" of the

Ophir, on the hillside below, and at the Yellow Jacket.

Harrison, the inquiring rancher, appears to have gone back to his wheat fields, but though it was nearly midnight before the value of the rock was known, half the people within a radius of five miles had the story before breakfast time. Then the miners assembled to talk the matter over, and found that two of the best men in the district, Judge Walsh and Joe Woodworth, had loaded a pack mule, saddled their horses, and started long before daybreak for Virginia City. They could not have travelled faster if a score of *vigilantes* had been on their track. This rapid stroke of energy was like a match thrown into gunpowder. Hundreds of miners left their claims and began to pour over the mountains on foot, on horseback, or in wagons, hewing out new trails and roadways.

It should be explained that the Pacific coast had long been a region of periodical mining excitements. Away back in 1852 it was reported that the ocean was washing up gold on the beaches of Humboldt County—so much, in fact, that, as Ross Browne said, it was generally believed that any enterprising man could take his hat and a wheelbarrow and in half an hour gather enough gold to last him for life. A year or two later the Kern River rush nearly depopulated the northern half of California, and for three hundred miles the dry and dusty plains were fairly spotted with thousands of eager prospectors and speculators; most of whom returned, like the Gold Bluffers, ragged and penniless. Next came the still more memorable rush to Fraser River, British Columbia. Farms were abandoned, crops rotted in the fields. Thirty or forty thousand Californians poured into English territory, when suddenly the gold gave out and the miners returned disconsolate. Every one had said that now, at last, there was an end to such sudden excitements; it would be impossible to impose again upon public credulity and upset the commercial progress of staid communities. Suddenly the air rang with a new cry, "Washoe! Washoe!" and the old Forty-niners were ready for the adventure.

Only a part of the great Washoe rush came in 1859, for the season was too far advanced. But as soon as reports from those who first crossed the mountains came back to the California settlements, men went wild with excitement. Judge Walsh, on the 12th of August, had managed to buy out nearly the whole Comstock group of claims, and Joe Woodworth also "got in on the main lode." Men of every type and nationality crowded the mountain roads and staked out prospects on every hand.

A correspondent of the Sacramento Union, writing from Ophir Diggings, October 22d, reported that the total yield of the half-abandoned Gold Cañon claims for 1859 was $24,000, obtained by forty miners working one hundred and twenty days. Fifty Chinese miners in the Carson River placers obtained about $35,000 the same season. Of course the above does not include Comstock returns, excepting a very little of the first placer yield there. But, according to figures published in the Californian newspapers late in 1859, "Ophir, Central, Mexican, and Gold Hill" claims had yielded $275,000 before the winter storms prevented further work.

One of the most severe winters ever known in the region now followed, five or six feet of snow falling in Virginia City. Firewood was very hard to obtain, and the tents and huts of the pioneers were extremely uncomfortable. Many lived in "dug-outs," which they called "holes in the wall." All outside communications were cut off. Cattle, horses, and animals of every kind perished from cold and starvation. The Indians of Washoe suffered greatly, and many of them perished. Flour was worth seventy-five cents a pound, and hardly anything eatable was any cheaper.

Some were glad to get away in the spring of 1860, abandoning their claims as not worth such a struggle, but the great majority were wild with the passion for sudden riches. The small backward eddy was met by the vanguard of a still vaster army. Long before the snow was sufficiently melted to render the passage of the Sierras entirely safe, multitudes were forcing their way across.

The severity of the winter of 1859–'60 had caused such high prices at the new camp that every effort was made to get goods in early. Before the end of February mules laden with supplies were led for miles on blankets spread over the snow to prevent them from sinking. The journey at that season was like crossing the Alps in midwinter. Forgotten heroes of the long battle of the frontiersman with the wilderness toiled on and up, over the ice and snow of the Sierra passes, seven and eight thousand feet above the sea. A hundred and sixty-two miles was the entire distance from Sacramento by Placerville, the main route, but forty miles of this was comparatively easy. Then the ascent began, first in the warmer foothills, but very soon in slush and snow. Saddle trains were started for passengers before any vehicle could get over the passes, where the snow in some places lay fifty or sixty feet deep. Sleighs were tried, but the deeper drifts alternated with bare, windswept rocks. At the earliest possible moment stages began to run, some by Truckee, others by Placerville.

The advance guard of the army of prospectors and speculators reached Placerville to find further movement prevented by a snow blockade. Hundreds of tons of freight lay on the hillside, though a dollar a pound was freely offered to any one who would get it over the mountains. More freight was surging night and day toward the congested streets of Placerville. The steamers from San Francisco to Sacramento were "reeling under loads of Washoe freight," to quote from a correspondent of the San Francisco Bulletin in March; their deck loads consisted of sprawling figures discussing the Washoe Mecca in a dozen different tongues. Merchants closed their stores; clerks left their desks and teachers their schools; sailors slipped overboard and swam ashore to join the silver seekers; mechanics threw down their tools, and farmers abandoned their fertile ranches in the broad California valleys. Bars of white bullion, the first silver from Washoe, were piled in bank windows, or followed by admiring crowds through the streets, arousing and increasing public interest.

One shrewd trader named Moore came to the front. Having a few dollars to invest, he left San Francisco March 9th with two hundred pairs of blankets costing two dollars a pair, twenty dozen tin plates costing twenty-two cents a dozen, and a large assortment of liquors. He managed in some way to obtain pack mules, so that he reached Virginia City on the last day of March and sold two hundred dollars' worth of drinks before nightfall. Forty men paid him a dollar apiece per night for the use of blankets and space enough in his tent to sleep in. Moore refused eight thousand dollars for his goods, which had cost him less than one fifth as much. The next trader to cross the mountains retailed some shovels for nine dollars apiece.

A letter written April 5, 1860, to the Mountain

Democrat, of Placerville, describes most vividly the condition of things as they appeared to one of the first arrivals of the season who had fought his way over early in March, even before the arrival of the Moore party. "There are few houses in Carson Valley," the prospector writes. "I have seen only about one acre of ploughed land." He describes the "Washoe zephyrs" that blew day and night from the snow peaks, and adds that there was a foot of snow on the ground and a snowstorm in progress. At the time of writing, lumber "was selling for four hundred dollars per thousand." Eight or ten small buildings were being put up. Canvas, boulders, and dried hides were used to save lumber. The business of the town appeared to be "eating, sleeping, drinking, and gambling." Wages were five dollars a day, but meals and shelter cost four dollars. Though many men were said to be millionaires, it was merely by reason of estimates of the value of their claims.

This was probably a very truthful statement of the condition of affairs in the spring of 1860, but wildly exaggerated statements had gone abroad, as in all mining excitements, in which most persons appear to entirely lose the power of distinguishing truth from falsehood. It was commonly believed in San Francisco that many and large *arrastras* and quartz mills were turning out tons of bullion, when in fact all that the miners could do in that line in the fall of 1859 was to build a few small mule-power and two water-power *arrastras* on the Carson River that pulverized two or three tons of rock a day. The loose, decomposed surface rock was exhausted.

This was the time when the old crowd rejoiced audibly that they had sold out before the new diggings were exhausted. Alvah Gould, who sold his half interest in the "Gould and Curry" for four hundred and fifty dollars, and twenty years later was keeping a peanut stand at Reno, went galloping down Gold Cañon immediately after the sale, shouting, "I've got away with the Californians!" The whole country was crossed by such a network of quartz ledges that very few persons looked upon the Comstock group of claims as any more valuable than hundreds of others.

The picturesque features of this great affair, the famous rush of 1860, have never been more pleasantly illustrated than by a series of papers entitled "A Peep at Washoe," which first appeared in Harper's Magazine. Written by that genial and accomplished Californian, the late J. Ross Browne, they abound in unfailing humour and clear-cut common sense. No writer of the time better knew how to use his material, and he had the spirit of an almost ideal newspaper reporter. He went to Washoe among the earlier pilgrims, "roughed it" in a truly refreshing manner, and reproduced with pen and pencil exactly the essential elements of the scene.

Ross Browne, as every one called him, reached Placerville by stage from Sacramento with "two pair of blankets, one extra shirt, a plug of tobacco, a note book, and a paint box." The roads beyond Placerville were so bad that the stages had just been taken off. The town was therefore full of pilgrims anxious to cross the mountains, and "practising for Washoe" in the saloons and gambling places. Every sign bore "Washoe" in large letters. Pack trains were starting daily for the mines. The livery stables had their horses and mules engaged a week in advance. The town was full to overflowing. Men who could not get beds slept on the floor. There was nothing but Washoe to be thought of or heard of; Smith "had made ten thousand dollars there at a single trade"; Jones "had found a twenty-thousand-dollar mine" the day he arrived; and Robinson's canvas hotel was "worth forty thousand to him." Browne revelled a while in all this tumult; then, finding it impossible to obtain anything to ride, he joined a party of four who were starting on foot. They filed along the ravine that formed the main street of Placerville, with their blankets and provisions strapped on their backs; the crowd shouted "Go it, Washoe!" and they departed up the grade toward "Strawberry Flat."

It was April, and the track was furrowed with disaster. Broken wagon-tongues protruded from the mud. "Loads of dry goods and whisky barrels lay wallowing in the general wreck of matter." Along the worst parts of the cañons whole trains of pack animals "struggled frantically to make the transit from one dry spot to another," or rolled headlong to the bottom of the gulch. The cries and maledictions of the Mexican *vaqueros* were terrific. Browne makes a faint attempt to describe it as follows: "Carambo! Caraja! Sacramento! Santa Maria! Diavolo!"

Nightfall overtook the five wayfarers at "Dirty Mike's," a shanty with a bar and a public bedroom, where they spread their blankets. The furniture consisted of a piece of looking-glass on the window frame, and the public comb hanging by a string from the doorpost. Supper consisted of coffee, beans, and potatoes. The plates, like the landlord, had seldom seen water.

As the travellers proceeded on their way the next morning they were more and more impressed by the unique features of the great rush of which they formed a part. "Taverns of dry-goods boxes and old potato sacks," board-and-lodging signs over tents scarce ten feet square, saloons where the whisky barrel set in the shade of a pine tree formed the bar—such were common scenes along the road. They were never out of sight of pilgrims—Irishmen with wheelbarrows; American, French, and German miners with tools and heavy packs; Mexicans with burros; gamblers and confidence men on valuable thoroughbreds; Missourians struggling through the mud with their families and household goods in lumber wagons; drovers with hogs and cattle; organ grinders, Jew peddlers, "professors" with divining rods and electric "silver detectors"; women, even, dressed in men's clothing and usually under some gambler's protection. One saw youth and strength, illness and old age, cripples and hunchbacks—"all stark mad for silver." Weather-beaten, footsore, a counter-current of defeated, heart-broken men who had already seen too much of Washoe went slowly past, but none of the silver hunters paused. A few among the returning crowd looked prosperous, and tried to sell shares of stock in various Washoe mines to the newcomers. One of them was positively happy. He had taken a grindstone to the Comstock the previous autumn and made thirty dollars a day, as long as the stone lasted, grinding tools. Now it had worn to the middle, and he was on his way to Placerville to buy another.

Before dark three of the party had gone ahead of Mr. Browne, and one lagged in the rear nearly exhausted. Poor Browne pushed on to Strawberry Flat, about forty-five miles from Placerville, with a solution of paints and tobacco running down his legs as he walked through a driving rain. The famous "Strawberry Hotel" was a large log house, with every room and shed crammed full of treasure seekers. A door opened, the fortunate ones hurled themselves into the dining room, filled it, ate ravenously, and were driven out like cattle to give place to an equally hungry horde. Eight or ten times this process was repeated, and by the time Mr. Browne had taken his turn in this *mêlée* the "general bedroom" was filled by some three hundred tired wayfarers. Forty or fifty remaining pilgrims occupied a room about eighteen feet square. In the morning Mr. Browne found that his stockings had been stolen, a very serious loss when one was about to climb the Sierras.

The third day was wasted in a futile attempt to reach Lake Valley, and the fourth day's experience was even harder than its predecessors. The poor pedestrian, carrying thirty pounds or so, slid, slipped, rolled, and climbed along the winding trail, which "was perfectly honeycombed with holes." Lake Valley station was reached (Lake Tahoe) through the process of sliding down sections of the grade. Accommodations here were so poor that Browne decided to push on to Hope Valley, four miles distant. The weary traveller found the deepest and most adhesive of moist clay, but overtook three more pilgrims, and they tried to find shelter in the cabin of "Diogenes," as they named the only settler in the valley, a rough customer who sat on a pile of fox skins just inside his door holding a savage bulldog. Diogenes wanted no company, would sell nothing, and did not care if any number of Washoe tramps died on his doorsteps. The discouraged quartette went on to Woodford's, six miles farther, in the face of blinding sleet and a terrific wind. This station, a log cabin, was on the Utah line, and, as everywhere else, several hundred people were trying to get a little food and sleep.

The fifth day brought the traveller into the desolate sands of Carson Valley, where his feet were so blistered that he made only fifteen miles by sunset. Finally he felt unable to take another step, when he perceived a hot spring close by, toward which he crept. Finding the water saline, he bathed his feet, and was soon able to resume his journey.

The sixth day our hero proceeded by slow degrees to Carson City, and took the stage a few days later to the mines, eighteen miles distant.

A few weeks later, broken down by overwork and exposure and poisoned by bad water, he started back across the mountains. Another snowstorm had blocked up all the trails, and he was compelled to walk most of the way. "A perfect torrent of adventurers" was pouring over, forming an almost unbroken line "from Placerville to Carson City." He thought that almost the whole State of California was on the move to storm the Washoe mines. In vain he expostulated with prospectors, and said that though there were already eight or ten thousand people in Virginia City, not one man in fifty had either mines or work. Every one laughed and pushed ahead, determined to see the elephant for himself.

I have told Ross Browne's experiences in my own way and with considerable detail, because they appear to me typical, though much less severe than those which fell to the lot of many of the passionate pilgrims who were so wild to reach Washoe. The judicious reader will be able to infer that the settlement of an isolated mining district sometimes involves desperately hard work and reckless expenditure of energy. The fact is, no one who has not seen it is able to fully conceive of the nature of the struggle that goes on ceaselessly, remorselessly, in such epochs as the one under consideration. This very summer the rush to Alaska left hundreds of penniless wretches, who were totally ignorant of pioneering work, in starving groups along the sea-coast, and they were gathered up by various relief expeditions.

In the midst of the excitement, while Virginia City was growing like a mushroom, the news of an Indian massacre was brought to the camp. The story was that the Piutes had attacked a stage station twenty miles away, had killed the men who kept it, and had burned the cabins. It was really some young men of the Bannock tribe who, aroused by terrible outrages, had killed the guilty men; but a company of one hundred and five volunteers from the mining camps started hastily for the main Piute settlement at Pyramid Lake to "teach the scoundrels a lesson." In the battle which followed, the whites suffered one of the most complete defeats on record. More than half were killed, and the scattered fugitives fled back to the towns, saying that the Piutes were coming with five thousand warriors. The excitement in Virginia City was tremendous. Martial law was declared. A rude fort was built for the women and children. Water pipes were melted into bullets. Watchmen were placed on the hilltops. A cry for help was sent across the mountains, and the California militia and regulars soon marched against the Indians, who were defeated and driven into the desert. It is the opinion of most students of the affair that the trouble was entirely unnecessary, but from a purely literary point of view it seems to belong exactly where it happened—in the midst of the great "Washoe rush."

Twenty thousand people went to Washoe in a few months, and half of them remained there. Other thousands followed and scattered out to new camps, until the movement inaugurated by Judge Walsh when he saddled his mule at midnight and slipped out of

Grass Valley, bound for the new silver camp, became the definite settlement of a new State. Among the Californians who came early were James G. Fair and John W. Mackay, unnoted in the throng. There were to be many successive dynasties of "kings of the Comstock" before the names of either of them should be heard abroad.

Through 1861 and 1862 the rapid transfer of men and money to Nevada continued, but splendid mountain highways were constructed by that time, and the story of the Comstock was presenting new elements of surprise. The real romance and heroism of the episode belongs, as in California, to the first two seasons after the rush began. The years 1859 and 1860 in Nevada history correspond to the years 1849 and 1850 in California history. Both periods alike witnessed a marvellous movement into the wilderness—one for gold, the other for silver. The social and financial relations of the two communities—one west of the Sierras, the other east—have been very close at all times, but the people of Nevada soon developed characteristics of their own. A Californian, after dwelling a decade or two in the sage brush and desert, became a Nevadan, much as the Virginian of the last century who crossed the Alleghanies into the land beyond became, in the course of a generation, a Kentuckian.

CHAPTER IX.

OLD TIMES IN VIRGINIA CITY.

IN a new mining camp all things start at once into feverish activity. Mines must be opened, mills built, roads and telegraph lines constructed, towns created and supplied. Prospectors are at work; speculators are buying and selling. New industries of every conceivable description are springing into existence. Nothing is considered done for "good and all." Within a month after a building is roofed over it may be torn down so that a larger one can take its place. All these things are simultaneous to a degree that no narrative can hope to rival. Though scattered into chapters for the sake of convenience, it must be remembered that the story of the first busy year or so in the Comstock towns is in reality but one great event—one mingled picture of pioneers, prospectors, speculators, town builders, underground miners, silhouetted against Mount Davidson.

When the "surface diggings" began to pay in the spring of 1859 the first effort of the miners, as in nearly every case on record, was to organize in some rude, simple manner for the better protection of life and property. In a historical sense, this was a mingling of the two currents of political development—the unsatisfied desire of the settlers of Western Utah for a separate territorial government, and the transplanted system of camp "rules, usages, and customs" that had been created a decade before in California. A few ranchers in Honey Lake Valley had already organized the "Territory of Nataqua," which finally led to the "Sage Brush Rebellion" of 1862. A larger group of ranchers in Carson and Eagle Valleys were taking steps for the formation of a provisional government for the proposed "Territory of Nevada." Meanwhile the men of the new camps were not only sending delegates to the ranchers' convention, but were adopting local regulations.

On June 11th, at Gold Hill, a miners' meeting made the following rules: That no Chinaman should ever hold a claim in the district; that all "banking games" should be prohibited and professional gamblers banished; that theft or robbery is to be punished by stripes or banishment, as the jury may determine; that the penalties for assault and battery or "wilful wounding" should be fixed in the same manner; and, lastly, that murderers should be hung. Gold Hill had had one homicide in April, when the first house was being built, two of the miners having quarrelled in a game of cards, and the survivor was on trial at Carson City at the time of this miners' meeting. The affair caused the adoption of a mild regulation against "exhibiting deadly weapons." To prohibit carrying them was evidently a refinement of law entirely beyond the pioneers.

Nearly all the miners did their own cooking, but as slapjacks, beans, bacon, and coffee constituted the usual programme, their task was not very difficult. Hotels and restaurants, such as they were, charged too much, and so the newcomers secured some kind of shelter and the regulation coffeepot and frying pan as soon as possible. Blankets were of primary importance. Picturesque costumes and a general air of being

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View of Virginia City.

engaged in a summer outing have existed only in the minds of romantic writers and artists of mining camps. Coarse, cheap clothing, dirt and rags, are really the salient features. The Comstock miners were compelled to do their own mending and patching as long as flour sacks lasted, and as leather belts were generally worn, buttons were never of much importance.

For some months the only way to carry goods to Virginia City was on mule-back, and the few boards in the camp were taken there in this manner from Washoe and Genoa sawmills. Firewood was scarce and costly. The nut-pine trees were soon cut down; Indians grubbed up the roots and sold them to the miners. Sage brush was burned a good deal, but still many people were not able to afford the luxury of a fire except for cooking. Tunnels, run into the hills and widened into one or two rooms, became very popular for winter residences. Some miners cooked in a brush hut outside; others cut a shaft for a stovepipe, and the hillside sometimes smoked as if a dozen small volcanoes were in active operation. One large cave accommodated twelve or fifteen men. A Scotchman near Silver City made quite an underground dwelling in a hill of rock. He was widely known as the "Nevada Hermit," and passed most of his time reading in a library of several hundred volumes, which occupied one of the rock-hewn chambers. Sunday afternoons he used to receive visitors and read sermons to them.

Virginia City, however much it needed sermons, got none in those days. The shapeless town, crossed at various angles by three straggling lanes, had no social life except in the saloons and gambling houses. Cheerful, well-lighted, full of excitement, these were the real homes of the miners. Gold and silver were stacked up on the *monte* tables; dice rattled and cards were shuffled all day and all night. The ragged, greasy, dirt-covered multitude filled the saloons with loud talk and laughter, except when a pistol-shot rang out sharply and the crowd swayed into the street. Lyman Jones's canvas hotel, eighteen feet wide and forty feet long, was one of the first of these saloons. The "bar" consisted of an old sluice box and the bar fixtures were a pitcher and a dozen tin cups. Another bar was made of the side of a wagon box, carried up the gulch on mule-back.

Winter weather in Virginia City, or rather the extent and variety of it, considerably astonished the newcomers of '59, and was even a surprise to those old-timers who had been living in the more sheltered ravines. Some kinds of the weather were much worse than other kinds, but all were execrable. One writer remarked that "Washoe has no climate of its own." All it has "is blown over the Sierras from California and comes in fragments." Several avalanches occurred after thaws in the winter. Some miners were dug out with difficulty, and one or two persons lost their lives.

None of these things were so terrifying to the pioneers as the gales, or "Washoe zephyrs" which plunge furiously downward from the crests of the snow peaks and sweep in wild eddies and whirlwinds of terrific force about Mount Davidson. A man's hat is sometimes carried from his head, lifted a hundred feet vertically, and then dropped, a twisted mass, at his feet. Such a wind rips boards, shingles, and sheets of tin from buildings, tumbles stovepipes and chimney pots down the gulches, and fills the air with flying gravel. When the miners founded Virginia City they knew little or nothing about the zephyrs, and nearly every shanty, tent, and hut was blown out of sight after a few gales. Two of the first churches built were blown flat. Tradition relates that during those early gales the air was filled with rags, empty cans, bottles, crowbars, pickaxes, cooking stoves, cats, and Indian babies. One veracious chronicler says that a donkey was once caught up from where he was grazing on the side of Mount Davidson and blown eastward over Virginia City at the height of six hundred feet above the town, finally landing at Sugar Loaf Mountain, several miles away. The eyewitnesses aver that as the poor beast was hurried over his master's cabin "his neck was stretched out to its greatest length, and he was shrieking in the most despairing and heartrending tones ever heard from any living creature."

In the spring of 1860, when excitement was fairly boiling over, a visitor wrote the following terse description of the "wondrous city of Virginia," and nothing could better serve to sum up its appearance: "Frame shanties pitched together as if by accident; tents of canvas, of blankets, of brush, of potato sacks, and old shirts, with empty whisky barrels for chimneys; smoking hovels of mud and stone; coyote holes in the hillsides forcibly seized by men; pits and shanties with smoke issuing from every crevice; piles of goods and rubbish on craggy points, in the hollows, on the rocks, in the mud, on the snow—everywhere—scattered broadcast in pell-mell confusion, as if the clouds had suddenly burst overhead and rained down the dregs of all the flimsy, rickety, filthy little hovels and rubbish of merchandise that had ever undergone the process of evaporation from the earth since the days of Noah. The intervals of space, which may or may not have been streets, were dotted over with human beings of such sort, variety, and numbers that the famous ant-hills of Africa were as nothing in comparison. To say that they were rough, muddy, unkempt, and unwashed would be but faintly expressive of their actual appearance; they seemed to have caught the diabolical tint and grime of the whole place."

Few mining camps have been so utterly neglected by the civil authorities as was Washoe. The people kept appealing to Congress to set them apart in a new territory, or join them to California. Lawbreakers soon drifted in, and the miners' honest efforts to preserve law and order became of little value in the wild scramble. Parasites and desperadoes, the classes that curse every prosperous camp, were often among the first that arrived. The miners' courts, as a rule, paid more attention to offences against property than to those against life. Two of the early thieves were tried under a pine tree; each had an ear cut off, and the men were driven out of the district. But there was no law for the bullies, the "Big Chiefs" as they were called, who terrorized the busy town. As Mr. Eliot Lord says in his graphic book, Comstock Mines and Miners: "They lolled on gambling tables and the bars of saloons, and swaggered about the city at all hours of the day and night."

Every one has heard of the "Tombstone Terror" and the "Bad Man from Bodie." The type has gradually become semi-humorous; an alliterative Terror is robbed of half his dreadfulness, and becomes a cheap, theatrical, amusing villain. Not so in the old Comstock days of "Big Chiefs," the most of whom were plain and prosaic scoundrels too long unhung. One, Sam Brown—heavy-voiced, burly, insolent—had killed thirteen men in Texas and California before he reached Washoe. He kept a station on the Humboldt for a time, and once when a traveller desired something to eat, Brown pointed to a piece of bacon. The traveller having no knife, asked for one. Brown pulled out an immense bowie, then thrust it forward with the remark that he had "already killed five men with that knife," and the startled visitor fled in haste.

Brown on one occasion in Virginia City took offence at some remark made by a poor half-witted fellow. Without a word he seized his prey and slashed him to pieces with the terrible bowie. Then he lay down on the billiard table and went to sleep while the remains of the victim were being gathered up from the floor. This incident and several others quite as bad are well authenticated in the history of the rampant ruffianism and crime of the period. Sam Brown's long list of murders came to a sudden end when a plucky rancher whom he had threatened to kill on sight filled him full of buckshot.

A few "gentlemanly cutthroats" of rather more prepossessing appearance were occasionally found—men like Cherokee Bob, of Oregon and Idaho, the undoubted original of Bret Harte's Jack Hamlin. One of these, "El Dorado Johnny," desiring to shoot a man, bought a new suit of clothes, got shaved, had his hair curled and his boots polished, saying that he might be "used up" and desired to "look nice if he was killed," which was exactly what occurred.

As Virginia City, Gold Hill, Silver City, and other towns grew in size and wealth, thieves, rowdies, and footpads appeared to increase in numbers faster than the respectable, hard-working portion of the community. After a while robberies were of almost daily occurrence. A good many murders are supposed to have been committed during the reign of this lawlessness and when the country was full of strangers. Still, there never was anything like the amount and degree of outlawry in Nevada that there was at a later period in Montana, where the evil characters of the whole Pacific coast gathered, and went down at last before the stern justice of the *vigilantes* of the Rockies.

Before the close of 1860, as already sufficiently indicated, Virginia City had all the vices of large mining camps. Women of nameless reputations paraded the streets in gay attire and jewellery. The Sacramento Union sent a correspondent to the mines in September, who drew especial attention to the cosmopolitan character of the place—Italians, Frenchmen, Germans, Mexicans; each class was so well represented that all had favourite resorts. The first theatre was opened September 29th by a travelling company from Salt Lake that played Toodles and Swiss Swains and won a mighty reward in hard cash. Wandering barn-stormers were probably never more surprised at their reception.

Let us turn to another side of the picture. Heroes and lovers of humanity were in the camp, toiling to organize schools and churches and to create a civilized social life. All the leading religious denominations were soon represented, and some had small churches within a year or two. Noble Father Manogue, himself a miner in his youth and a man of endless pluck and zeal, did a marvellous work among the rough characters of the frontier. A Methodist, Rev. Jesse L. Bennett, preached the first sermon ever heard on the Comstock. It was delivered on the corner of C Street, and when the hat was passed after the services it came back "nearly filled with gold and silver."

Pioneer Comstock reminiscences are crowded with Piute stories. The Indians were good-natured, industrious, and seldom difficult to manage. Old Chief Winnemucca was an able diplomat, and many of his braves were fine hunters and guides. A great deal of the rough work of the period in mining and lumbering was done by the Indians. In Wright's Big Bonanza the following conversation occurs with an old Piute:

"When me first come here, no house here; all sage brush. Me work here, first time me come, for Ole Birginey, down in Six-Mile Canyum."

"At mining?"

"Yes, minin'. Me heap pull rocker. Me that time know Comstock, Ole Comstock. You sabe him?"

"Yes, I have seen him. He is dead now; got broke up in Montana; bad luck all the time; got crazy; shot himself in the head with a pistol."

"Hum! Ole Comstock dead! Well, Ole Comstock owe me fifty-fi' dollar. That money gone now. Well, same way Ole Birginey. He owe me forty-fi' dollar when he die. He down to Dayton long time ago. One day he bully drunk, he get on pony, pony he run, drag ole man on the ground and kill him. Me help dig one grave, down by Carson River."

A mining country is always dangerous to walk around in, for there are hundreds of abandoned prospect holes and shafts in the most unsuspected spots, perhaps overgrown by weeds and bushes. Many a poor fellow looking for a fortune has "mysteriously disappeared," and ten to twenty years later his bones have been found in some forgotten pit. Within a year or two after its settlement the country around Virginia City was fairly honeycombed with worthless shafts that served only to trap wild animals, goats, donkeys, horses, cows, and occasionally an unlucky miner. It added new terrors to the Comstocker's privilege of getting drunk and going home "across lots."

Old Virginia City people tell innumerable stories about these abandoned shafts, relics of the great rush. In one case a man started to look up his goats, and found footprints leading into an old tunnel. He ventured in, and fell into an eighty-foot shaft which had been sunk in the tunnel. The bodies of several goats helped to break his fall, and after some hours his neighbours tracked him to the place and rescued him. The engineer of a Silver City mill was once found bruised and insensible lying in a shaft in Virginia City, where he had remained for three days. There is another story about a teamster who unhitched eight yoke of oxen, leaving them connected together by the long log-chain and let them browse around while he cooked his dinner. Pretty soon he saw them bunch together and disappear in a three-hundred-foot shaft which had been covered with a little brush, hardly enough to hold up a good-sized dog.

Speculation was of course universal. While hundreds of claims of every description, located immediately after the first silver discoveries, were still buried under the snow, the owners were pleased to claim and the public to believe that each one of them was as valuable as the Ophir. These "wild-cats," as they were afterward called, were bought and sold with increasing energy for months. The actually incorporated companies formed during 1859 and 1860 numbered thirty-seven, with a capital stock of $30,040,000. The incorporations of 1861 numbered forty-nine, with a stock capital of $31,462,000. No one knows how many thousands of claims besides these were put on the market in those years. Time sifted out the worthless claims and incorporations until only a few were left. The first incorporation, Ophir, soon increased its capital stock to over five million dollars, Gould and Curry came next with $2,400,000, and so it went. At the time of Ross Browne's visit in 1860 he made an estimate of the companies who "claimed to hold" in the Comstock vein. There were nineteen, claiming a total of about twelve thousand feet, and Billy Chollar held the largest slice. Prices ranged from two hundred to two thousand dollars per foot. Only five or six of the names familiar to stock boards appear in the list.

Of "outside claims" Mr. Browne reports "about forty miles said to be on a direct line with the Comstock," and to be richer, if possible, than the original vein. Even the desert was "pegged like the sole of a boot" with claim stakes. "Indications" being once found in a Virginia City cellar, the whole town site was torn to pieces and covered with conflicting claims.

The miners had long before provided, after a fashion, for a recorder of claims, and had elected an honest but illiterate blacksmith of Gold Hill, V. A. Houseworth by name, whose book of records and memoranda is now one of the official treasures of Storey County. It was Houseworth's guileless habit to keep pen, ink, and the old blank book on a shelf behind the bar of an adjacent saloon. When miners came in to register their claims they went to the blacksmith shop, and the crowd adjourned to the saloon. Says Dan De Quille, "The 'boys' were in the habit of taking the book from behind the bar whenever they desired to consult it, and if they thought a location made by them was not advantageously bounded they altered the course of their lines and fixed the whole thing up in accordance with the latest developments." It afterward became evident in the course of many a tedious and costly lawsuit that the miners who tore out leaves, altered dates, and changed the records as they chose, had made endless trouble for themselves and for the district.

Wells and Fargo's Express Company, which has helped to develop almost every mining camp on the Pacific coast, opened an office in Virginia City in the very first days of its existence; but for a time at least the owners of Ophir and one or two other claims banked their gold dust with Lyman Jones, who kept it "without charge and without responsibility" in a dry-goods box under his bed, where twenty or thirty thousand dollars often reposed until the mine owners were ready to pay it out again.

The problems of early transportation necessarily included mails before the days of stage coaches. Snowshoe Thompson continued to carry letters across the mountains every winter. He even carried type in this way for the first newspaper in Virginia City. In summer time, after 1858, the regular overland stage carried mails twice a week along the Carson Valley. In April, 1860, the famous Pony Express was established across the continent. Its quickest time was 1,780 miles in five days and eighteen hours; stories of its lonely stations and its fearless riders are among the most attractive of frontier traditions.

That curious and vivid Western phrase, "grapevine telegraph," originated in 1859. Colonel Bee constructed a telegraph line between Placerville and Virginia City, attaching the wire to the trees; their swaying stretched it until it lay in loops on the ground, resembling the trailing California wild grapevines. Frequent breaks occurred from falling trees and avalanches, till the line became almost useless, being sometimes beaten into Sacramento by the Pony Express. California and Nevada newspapers took it up, and whenever a journalist wished to cast doubts on the freshness of his opponent's news he forthwith accused him of running a grapevine telegraph. But in the spring of 1861 the Overland Company pushed into the Sierras and successfully connected Virginia City with Sacramento by a modern telegraph wire on poles.

A little later in point of time, but still belonging in essence to the pioneer period, was the noted "Rowdy Fund." The Territory of Nevada was organized by act of Congress, March 2, 1861, and a superintendent of schools was then appointed. Pioneer schools supported by individuals were already in existence. Virginia City contained only two or three children of school age at the time, seventeen in 1862, and three hundred and sixty the following year. At Carson City a characteristic incident occurred. The town boasted of a small theatre, and one night two "prominent citizens," full of whisky and bravado, swaggered down the main aisle, drew their revolvers and bowie knives, and ordered the curtain to be dropped. They then mounted the stage and slashed the curtain to ribbons "in the presence of all Carson." The next day they voluntarily paid a thousand dollars into the town school fund, where it received the name of the "Carson Rowdy Fund." The affair, as it proved, was the result of a wager made in one of the Carson saloons.

Before closing this chapter a few statistics of the towns of Washoe at the end of 1860, when winter had already commenced, will give the reader an idea of what had been accomplished by the pioneers. In Virginia City the huts of early summer had mostly been replaced by board cabins, for lumber had fallen to $80 per thousand as soon as a good road was built. Over a hundred buildings were in process of construction, besides an uncounted number of lesser shanties. The town contained 38 stores, 25 saloons, 10 livery stables, 2 quartz mills, 5 lumber yards, 9 restaurants, 8 hotels and boarding houses, and 8 law offices, besides bakeries, blacksmith shops, etc. The monthly rent of a cigar stand was $125, and that of a wooden warehouse twenty feet square was $250.

Prices of supplies were very variable during 1860. Flour, which was 20 cents a pound in January, was $1 in April. The newspapers gave the following as customary rates until May or June: Brown sugar, 50 cents a pound; rice, 45 cents; butter, $1; tin plates, $9 a dozen; liquors, 50 cents a glass. Prices fell rapidly during the summer, but rose again with the first snowstorm. On October 27th flour was 14 cents per pound, barley was 12 cents, and hay was $100 a ton.

Wages were correspondingly high. Masons received $8 a day; carpenters, $6; tinsmiths, $5; common labourers, $4; cooks, $100 a month; waiters, $60. Ordinary miners got $5 and mill hands from $4 to $6 a day.

At the close of 1860 the population of Silver City near Devil's Gate was 594; of Gold Hill, 600; and of Virginia City, 2,244. The three small settlements in the valley—Dayton, Genoa, and Carson—had kept reasonable pace with the three towns of the Comstock. Other settlements were established in the Washoe Valley and the Truckee basin. The names of new camps began to be heard in every direction.

Everywhere, after the summer of 1860, the Californians controlled the politics and business of the region. In the constitutional convention of 1863 all except four out of the forty-three delegates had come to Nevada from California. In the convention of 1864, which drew up the constitution under which the State of Nevada entered the Union, all except four out of forty-six members were Californians. Long before this, however, the financial control of the Comstock had largely passed into the hands of San Francisco capitalists.

CHAPTER X.

FINDING, TESTING, AND WORKING ORES.

BEFORE the miner comes the prospector; the ore must be discovered before it can be tested, or the precious contents extracted. We have been so long following the fortunes of a single camp that we have in a measure neglected the hero of many an unsung epic of the American frontier. People often wonder why rich mines remain so long undiscovered, and why the early prospectors made so many mistakes, overlooked so many rich districts. On the contrary, a little reflection will convince any one that the exploration accomplished by the comparatively small class of pioneers who devote themselves to looking for mines is really very creditable.

Wherever the old quartz prospectors wandered with their blankets and burros they examined with critical gaze every boulder, and tried to trace every scattered fragment of "float rock" back to the ledge from which it came. They endured nameless hardships, fought Indians, starved and froze among the snow peaks, perished by thirst in the desert, or became old and worn out long before their time, despite their sober and outdoor lives. With pick and rifle they opened up nearly all the great mining districts of Nevada, Arizona, Colorado, Idaho, and Montana. The true story of their lives has never been written, and never can be written; it remains a sealed book, in a mysterious language of which only occasional episodes may be haltingly translated. The story in its fulness is only known to those who have spent years as wandering prospectors, the Boones and Carsons of the mining class, and such men can not tell it themselves.

Each prospector develops in the course of time his own pet theory of the formation of rocks, and more particularly of the genesis of gold and silver. He knows certain rocks, usually by terms of his own, and all the rocks he doesn't know are grouped under the convenient classification of "porphyry." An observing writer, F. M. Endlick, in the Overland Monthly, fifteen years ago, narrated something of the experiences of Grizzly Joe and Dutch Billy. They had followed up a bit of float and at last found the ledge from which it came, high up on the mountain side. It seemed rich, and one of them guarded it while the other went to the nearest town, several days' journey, to obtain an assay—thirty-two ounces of gold and nine of silver to the ton.

They named it the "Little Annie," after a frail, fair-haired child of years before, away back in some Eastern town. After a few weeks, as they worked on the ledge, she (all ore veins are feminine in miner phraseology)—she "did not show up well." Pretty soon the two walls inclosing the vein of ore came closer and closer together; after a few more days there was no ore in the bottom of the sloping shaft—the vein had "pinched out"; "Little Annie was gone." The two prospectors contemplated the deceitful "gash vein" with a mingled expression of grief and astonishment. Then, striking camp, they pushed on toward another district. Winter was approaching and "grass was getting short" with them—that is, their funds were running low.

"Halloo, stranger!" said Grizzly Joe a few weeks later to a dilapidated-looking specimen whose back was turned to the district they were bound for and who was evidently trying to escape from it with all possible speed. "Halloo, I say; been up to the new mines?"

"You bet!" was the laconic but expressive answer, while the stranger glanced sorrowfully at the holes which constituted the greater portion of his boots, and at the cacti and obsidian splinters strewn over the desert trail.

"Let's have your candid opinion of the chances there."

"Chances? I never seen none. There may have been some, but they're mighty well corraled, and I don't think the whole district is worth a blank anyhow, Cap'n."

"You're kinder down on your luck; but never mind, stranger, you'll strike it yet if you stick to it. Guess we might as well be there as anywhere else."

The two prospectors resumed their journey with dogged resolution.

Fortune finally smiles upon their efforts. Beyond the new district, in a region hitherto but slightly explored by prospectors, they find a permanent lode, and appropriately name it "Last Chance." Buyers come in, for one or two noted mines are in the region, and pretty soon they sell out for a few thousand dollars, divide, and separate for the winter. "Dutch, old pard, next spring we'll take another trip!" is Joe's parting remark.

In the last decade, prospecting has more and more attracted adventurous men, and in some cases women. Several thousand persons are busy, even while these lines are being printed, looking for new mines in deserts and mountains. In some districts prospecting can be done only in winter, in others only in summer, while a few favoured regions give explorers a chance through the entire year. Most of these men are "grub-stakers"; they get enough to live on—perhaps $15 a month—from wealthier miners or from speculators. The courts have decided that a grub-staker is entitled to half of every mine he discovers, and this interest, now and then, gives a man a fortune. Very few mines are being found in these days by haphazard luck. The successful prospectors are patient, methodical, indefatigable workers, who often spend years in following up indications, exploring every ravine and peak in a promising district. Every year some grizzled old prospector turns up with valuable discoveries, after half a lifetime of arduous, exacting toil on the frontier, and the good news inspires all the other prospectors with renewed happiness.

The processes of testing gold ores are within the comprehension of the most ignorant, but the most highly trained intelligence is required in the more delicate and difficult tests of the silver assayer. Nearly every quartz miner and prospector in Comstock days carried a small magnifying glass with which to examine ores. If the rock looked well, a specimen was pounded to dust in a common mortar or on a flat stone. The prospector then took it in his horn spoon, a flat vessel made from half of an ox horn, and washed it with great care so as to save every colour of gold. It will be seen that all this resembles the simple pick-and-pan method of prospecting for placer gold. The quartz prospector prefers the horn, because he only pans out a few ounces of powdered rock, and the flakes are so much finer that a more manageable tool is required than in the case of the placer prospector. This process is called "horning a prospect," or "assaying with a spoon."

In early days the only test that prospectors knew how to use for silver was with acids. They pulverized the specimens as if for a gold test and washed the lighter matter away, leaving all the metallic portion. This residuum was then put into a flask of annealed glass, covered with nitric acid, and heated over a flame. The contents of the flask were then treated with salt, or with muriatic acid, when chloride of silver was precipitated. Chloride of silver, once obtained, was easily reduced to the metallic form by drying it, placing it in a hollow cut in a piece of charcoal with a little soda, and blowing the flame of a candle against it, when it made a button of pure silver.

The old prospectors soon discovered that there were ores that were "obstinate" and refractory under the nitric-acid test. When the value of chlorides was discovered they dubbed every heavy metallic rock that they could not test for themselves a "true silver chloride." As the chloride ores have to be smelted in a crucible, the nearest assayer was called upon, and his returns were looked for with great anxiety. Usually the rock was not worth working, but sometimes it was a sudden bonanza, as was the case with the astonishingly rich chlorides of Colorado. In these days the best prospectors who do not wish to take any one else into their confidence have mastered the principles of using the crucible. Many a man who goes into the desert with his pack mule carries something of an assaying outfit, and can test almost any ore.

Since the Comstock mines contained gold, silver, copper, and other minerals, the management of their ores presented almost unsurmountable difficulties to the early miners as soon as they reached the ledge and were compelled to abandon their rockers. They naturally turned for help to the few Mexicans in the region, for every Mexican was supposed to have an intuitive knowledge of silver-mining processes. As long as this confidence lasted it was a very good thing for the sheep herders that strayed over the Sierras from the San Joaquin, for every Comstocker wanted to hire them at once.

When the mines were somewhat opened—that is, quarried into by the use of shovels, picks, crowbars, drills, and blasting powder—there was quartz to be worked for its hidden metals. The *arrastra* was the first method adopted. An *arrastra* is one of the simplest methods of pulverizing and amalgamating auriferous quartz. It was invented, or re-invented, centuries ago by the Mexicans, and consists of a circular bed from eight to twenty feet across, paved with stones, in which quartz that has been broken into small pieces by a sledge hammer is placed and slowly ground to dust by the dragging of a large " muller " or slab of granite over the quartz-covered pavement. In the best form of the *arrastra* the paving is very carefully done with hewn rock, granite, or greenstone; a boundary wall of granite a foot or two in height confines the quartz, and a post rises in the centre from a stone or iron socket. Two arms project from the post, fastened in a framework so as to revolve easily, and one of them projects so far over the wall of the *arrastra* that a mule can be harnessed there. Suspended from the arms are two huge mullers, or sometimes four, in which case two mules are necessary. Each muller weighs five hundred or a thousand pounds, and is suspended so that the forward end is an inch above the pavement while the other end drags.

The rule for breaking the quartz is to make it like

Interior of a Mill.

good road metal—no piece larger than an inch across. About four hundred pounds is then put into an *arrastra* ten or twelve feet in diameter; a thousand pounds into the largest size. If the quartz is not very hard it can be pulverized in four or five hours. The ore is kept wet all the time, and the grinding is continued until the mass is like cream. Quicksilver is then put in at the rate of an ounce or more to each ounce of gold that is supposed to be in the quartz, and the grinding goes on for an hour or two longer until the amalgamation is considered complete. Quite a stream of water is then allowed to run in through a sluice gate, and the grinding continues half an hour, to let the amalgam settle in the bottom. Grinding then stops. Another gate is opened, and the stream of water soon washes out the fine gray mud to which the rock has been reduced, leaving the metal on the bed of the *arrastra*.

From *arrastras* to stamp mills is an easy step for Americans. Water claims and mill sites were taken up almost as soon as work had fairly begun on the Comstock, and machinery was ordered in California. The principle of the stamp mill is very simple. Heavy iron stems raised by iron cams and receiving a rotary motion as they rise are used to crush the quartz. The mill men of Nevada County, where quartz mining was first undertaken on an extensive scale, were in great demand on the Comstock. They knew all about the most perfect processes in use in that famous gold-bearing district, and when they went to Washoe they built mills on the same general plans, with such modifications as experience suggested, but none of them knew much about silver ores.

The first working of Comstock ore was done at San Francisco in the winter of 1859, when forty tons of selected rock from Ophir was handled at some profit, though costing about twenty-four thousand dollars, including transportation and other charges. There could be but little thousand-dollar ore, even in Ophir, and so it was necessary to build mills in Washoe. A well-written paper by A. D. Hodges, Jr., of San Francisco, entitled Amalgamation at the Comstock Lode, Nevada, which was read before the American Institute of Mining Engineers in September, 1890, gives a trustworthy account of early milling operations. Many of the prominent mill men and inventors of the period were more or less controversial, and waged a dreary warfare against their rivals through numberless newspaper articles and pamphlets whose interest for modern readers has long evaporated.

Almarin B. Paul, a very able and intelligent mill man of Nevada City, began to study the silver sulphurets of the Comstock in the autumn of 1859. He treated them with the chemicals of the *patio* process, and, after many experiments, went to the mines, where he organized "Washoe Gold and Silver Mining Company No. 1." Selecting a site for his Pioneer Mill, in Gold Cañon, near Devil's Gate, he signed contracts on June 12, 1860, to work ore from Gold Hill on and after sixty days from that date. Few men would have taken such risks, for the machinery had to be made in San Francisco and transported across the Sierras, while the needed lumber was still growing in the forests. However, Paul worked as one inspired, and on August 11th, just in time to save his contracts, the steam whistle blew, and the twenty-four stamps of the Pioneer Mill began to rise and fall upon Gold Hill ore. Three hours later, and not far off, Paul's rivals, Coover and Harris, of Amador County, California, set in motion the machinery of their nine-stamp mill.

Without going into more technical details, I may explain that Paul crushed the ore dry in his batteries, and then amalgamated it in small Knox pans, each of which held about three hundred pounds. Each charge was treated with forty pounds of quicksilver, a pint of salt, and a few ounces of copper sulphate. When Paul had fitted steam chambers to the pan bottoms his Washoe process of pan amalgamation was an acknowledged triumph, especially with Gold Hill ore, which was simpler than that of the North End mines. In a few months Paul's company began to build another and much larger mill of sixty-four stamps, introducing mechanical improvements. Other mills followed, constructed with more and more skill. The ultimate Comstock verdict was in favour of stamps of about nine hundred pounds, dropping about a hundred times a minute, and crushing wet. Since that time the amalgamating pans have been greatly improved.

When the first mills were completed, the only mines that were being worked in a manner that really indicated the permanent value of the district were the Ophir, the California, and the Mexican. As the ore was taken out of these and a few other Comstock mines it was assorted into grades. The best, which would yield one thousand dollars a ton and upward, was sacked for shipment to England, except the small amount required to keep the *arrastras* running. The second- and third-class ores were piled up for future milling. Rock that would not pay fifty dollars a ton was hardly considered worth saving.

Even after pan-amalgamation systems began to come into general use some of the early milling men, like some of the early miners, learned their business by slow degrees. They knew very little about silver ores, and so the day of the "patent-medicine-process fiend" dawned on the Comstock. Washoe was fairly overrun by eager inventors with chemical compounds that they felt certain would capture every particle of gold, silver, lead, copper, and other metals and grade them into separate piles. Every ragged and penniless dead beat in Virginia City buttonholed mine owners and mill men with a story of some secret process "worth millions, sir!" Sulphate of copper, salt, and quicksilver, long used by silver miners and mentioned in every mining book, were not sufficient. Neglecting the good old axiom that thorough grinding and working of the ores is the primary principle of successful milling, everybody seemed to go rainbow chasing for something that would perform impossible chemical wonders. A number actually used immense quantities of a bitter sage-brush decoction, and were thoroughly persuaded of its efficiency until a few of the newspapers praised the famous "sage-brush process" to the skies. As late as 1862 there was a mill on the Comstock that advertised reduction of ores by the "sage-brush method." It was argued that Nature had created this most bitter and worthless Artemisia for the express purpose of getting the metal out of Nevada's silver mountains!

When such absurdities as this were believed by the masses it is no wonder that half-crazy schemers with a few ponderous phrases at their command could impose upon the community with secret processes for which they wished large sums of money or royalties. They hailed from every part of the world. The Englishman had "studied silver in Cornwall," the German at Freiberg, the Spaniard in Sonora or Peru, and each and all carried the whole trick in a little bottle in his vest pocket, ready, for a consideration, to pour a few drops into the amalgamation pan.

The mill men, as I have said, caught the popular desire for some easy and "dead-sure" method, and long after the notion of cedar and sage-brush decoctions was definitely abandoned many of them were still ransacking the drug stores of California for new and unheard-of substances to mix with the pulverized rock in the batteries. Alum, saltpetre, borax, potash; all the acids obtainable, from muriatic to sulphuric; tobacco enough for an Australian "sheep-dip"; a multitude of strange drugs and vile concoctions never before known in the mining world, and seldom since—such were some of the contents of these witch caldrons.

Meanwhile the building of new mills went on with all haste possible, at great expense and in all sorts of places, whether or not there was ore enough in sight to keep them busy. No less than seventy-six mills, costing in the aggregate six million dollars and carrying 1,153 stamps, were built and running by the end of 1861, and twenty more were planned or being built. Several Mexican *patio* yards and fifty or more *arrastras* were in existence. All this was within fifteen miles of the Comstock. The mills lined Seven-Mile, Six-Mile, and Gold Cañons, from Virginia City to the Carson River; they were scattered along the Carson for ten miles or more, and several were even on Washoe Lake.

It would seem as if the main problems were now solved and the success of the districts assured. But, notwithstanding the plenitude of energy and capital poured out, the chief result for years was loss and bitter disappointment. So many mills were built that the ore in sight in the mines could not possibly supply half of them, and the price of reduction fell to twenty or thirty dollars a ton, which did not pay the majority of the mill owners with their crude processes and high prices of labour. The whole country was so overflowing with excitement that every prospector deemed himself a millionaire, whose rich ledges had only to be poured into hoppers to run out bullion. Every one was willing to accept the wealth of the region on the strength of vest-pocket samples of ore. Forgotten mines, like the once-popular "Sucker," were expected, according to their assayers, to pay five hundred dollars to the ton —and yielded less than twenty dollars on a working test, so that none of the mills of the period could show the owners a profit. Numbers of the mines never yielded much besides assessments and litigation.

Kelly's First Directory of Nevada Territory, which I find was written for him by the versatile Dr. De Groot, and is now an extremely rare volume, contains descriptions of all the mills built in the various Nevada districts before the close of 1862. He lists some eighty-two effective mills. A low estimate would be that fifteen hundred tons of ore a day could be worked in all these mills—provided that it could be obtained; but the mines were not producing more than four hundred tons daily! The published statistics of the mills vary greatly. The Surveyor General's report for 1865 mentions only eighty. J. Ross Browne's report, three years later, gives 122 mills, with 1,462 stamps.

Some of the mills of the pioneer period (1860–1863) are still spoken of among miners as magnificent examples of wild extravagance. The great Ophir Mill property contained, besides the mill itself, large shops, stables, offices, and residences. Up to April, 1862, as estimated by Mr. Lord, $349,200 was paid for the reduction of only three thousand tons of ore, for freight, and for office expenses. The works had cost $200,000 additional. "Gould and Curry" built the greatest mill folly of the time on an artificial plateau cut out of a rocky point two miles east of Virginia City. It was a highly artistic structure of stone and wood, approached by steps of stone and broad terraces. A lake and fountain, and groups of costly residences, offices, and cottages won the visitor's admiration. Very nearly a million dollars was spent here in picturesque profusion by the prosperous mine owners, then in the full glory of a famous bonanza. But turning to results, we find that at the close of the year 1863 this prodigal mill had been able to reduce only 4,812 tons of ore, at a cost of about fifty dollars a ton. It was found necessary to throw out nearly all the machinery and reconstruct the mill in 1864 at a cost of nearly $600,000.

As the reader may conclude from the preceding paragraphs, none of the pioneer mills—not even the costliest and largest—were such mills as a progressive miner of the present time would use if he could help himself, though they were the best that could be constructed upon lines of California experience. But millions of dollars were undoubtedly lost in the first few years, chiefly because the tailings, or pulverized rock that has passed through all the processes for gathering up the metal, were suffered to go into the streams, to be washed at last into the Carson sink, or alkaline lake. No one thought of putting in a flume and running the waste to some flat, to be kept until cheaper processes made it possible to work it at a profit.

Mexicans are accustomed to saving mine tailings, and if any Mexican was out of work he went down into Gold Cañon and "concentrated tailings" for a living, usually by the *patio* process. Two men who worked in the summer of 1860 in this way are said to have taken three thousand dollars apiece with them when they left the district. Although there was every sort of evidence that the streams were full of precious metals lost from the mills, it was years before the tailings were properly impounded in reservoirs for future working.

The problem of handling tailings severely tried the best metallurgical skill of the times. The term "tailings" as here used includes all the ore residues, or waste, whether slimes, pan tailings, or concentrates. Louis Janin and his brother, leading metallurgists on the Comstock, began to experiment with tailings as early as 1862, perfected a process, and built separate mills, gradually creating an industry which employed many men and at times yielded large profits. The most successful tailings mill was Langtry's famous Lyon Mill, at Dayton, at the mouth of Gold Cañon.

One of the heaviest expenses of mill men is for mercury used in amalgamation. Quicksilver will divide into infinitesimal particles, and the smallest particle was found to contain gold and silver. How should it all be secured? Water that seems as pure as a mountain spring, because it has passed through flumes and settling pits after leaving the mill, is yet found to contain these particles. Even as the mint authorities find it necessary to save all the dust and soot, even on the roof, and occasionally melt out the gold, so the mill owners in every district find that the profit of the district depends upon a constant attention to details, and more particularly upon adopting every possible method of securing these elusive particles. As for the quicksilver which is so necessary to miners, the Comstock ores alone have sometimes required as much as eight hundred flasks, or 61,200 pounds a month. A whole colony of people in the California Coast Range, at New Almaden, were once producing quicksilver with all their might to send to Nevada. As the miners are fond of saying, "It takes one mine to run another."

The end of all such prospecting, costly testing, experimenting with ores, and building expensive mills in any new district, is that at last it is definitely determined whether or not the ores can be worked with profit. If not, the whole place goes to ruin. Mills, roads, shafts, tunnels, houses, hotels are deserted more rapidly than they were constructed, and everything is often abandoned as not worth hauling out. Avalanches sweep away the buildings or they fall into ruins. Grizzly and panther prowl around the deserted camp where thousands of men had staked their hopes and fortunes. There are many such deserted towns in the barren mountains whose very names are forgotten. The men that founded them are dead; the trails are obliterated. There is no pasture, or forest, or farm land to tempt any one to dwell there again. It is a more profound desolation than the desolation of Tadmor or Nineveh.

But if the ore is really rich, no matter how refractory, the story of a deserted mining camp is never sealed up and put away. As long as it remains an unsolved problem in metallurgy, it attracts tireless interest in the world of mining science until some new process—cyanide, or something else—is found to do the work. Till then, the best skill of the laboratories of America and Europe is focused upon the difficulty, and new hosts of miners are only waiting the word from some discoverer to pour again into the ruined camp and dispossess the panther and the grizzly. Sometimes they find a lonely miner there who has held his claim a quarter of a century or more, waiting for some one to unlock the treasure-house; sometimes they find only his bones, for Science, unheeding, eternal, takes no count of human years.

CHAPTER XI.

GREAT MECHANICAL PROBLEMS SOLVED.

Too much emphasis can hardly be put upon the purely business side of mining on a large scale, and the complete organization displayed therein. A favourite device of the cheap mining-camp novel, intent on thrilling situations, is to populate the abandoned drifts and worked-out ore chambers with rival secret societies of regulators and desperadoes. Here crime "holds high carnival" through plot and counter-plot and mystic midnight sessions (even in mines such meetings must take place at the time-honoured hour). All this goes on for weeks without causing the slightest suspicion on the part of the honest miners or mine owners that outsiders are occupying the place in a sort of Box-and-Cox manner. Such a scene in a novel or on the stage is apt to rouse the rude laughter of those who know mines and mine owners as they really are.

A quartz mine is always guarded with jealous care, especially if its shares are listed on the stock boards. No one goes down without a permit, and certain portions of the mine are never visited except by the owner, the superintendent, and a few reliable men. The actual condition of the mine is only known to a few persons. Many times the whole mine is shut down to outsiders, so that even personal friends, newspaper reporters, and men of science are kept from any knowledge of what is going on within. As a consequence of such systematized watchfulness, few persons ever see the whole working of a mine, and a multitude of absurd popular myths have arisen. In fact, most people never see anything of a quartz mine in operation, for they are all difficult of access. Lastly, there is only a small proportion of those who do visit such a mine who ever obtain a true conception of the mechanical problems involved in the gigantic task of working it successfully.

Comstock miners say that it is evident that the preconceived ideas of most persons who visit Virginia City to see the mines are derived from quarries or coal mines, and neither are of much value in the case. A quarry of building stone, opened to the sky, certainly requires much and highly skilled labour to choose the valuable portions and reject the inferior, to clear away the refuse, and to cut and break out the required blocks. Expensive and powerful machinery is used. All the surroundings of the occupation are large and free, so that the quarryman is a sturdy figure among craftsmen, but quarrying can not even be called an apprenticeship to quartz mining. A collier encounters many of the difficulties of the miner for metals, but others are equally unknown to him, and he often quarries along in the coal vein as easily and steadily as if he were breaking out slabs of sandstone from a windswept hillside.

Mining is not well-digging or quarrying, even in the blanket deposits of Arizona, or the blanket veins of the Rand, though sometimes ore bodies are found that require little other labour. But every mine of the true fissure-vein type is an original and separate problem. Underlying the picturesque details are vast and ever-increasing difficulties, met or avoided by constantly developing human skill, rising in time of need to positive genius, so that a great mining engineer ranks with the builders of pyramids and Brooklyn bridges.

As soon as the miner has succeeded in working his ore he knows, in terse camp language, that he "has a mine, and not a hole in the ground." Then he begins to "develop the mine"—that is, he endeavours to ascertain its value and put it into shape for profitable working by explorations, necessarily very expensive, and by planning his operations, both on the surface and underground. The miners burrow their way through the earth, searching for precious metals, toiling through barren acres for weeks and months, or following threads of ore, streaks of clay, and a thousand "indications" that are Greek to the uninitiated, but which may lead at last to a rich deposit. They are beset by perils of flood and fire, of explosion, of falling rocks, of the collapse of roof, sides, or floor of the narrow places in which they toil. And, in the mining phrase, "no man can see an inch ahead of the end of a drift"; no diamond drill can take away the uncertainty of the business. The miner, in point of fact, is turned loose in the heart of the rocks and left to creep around there like an ant in a mountain.

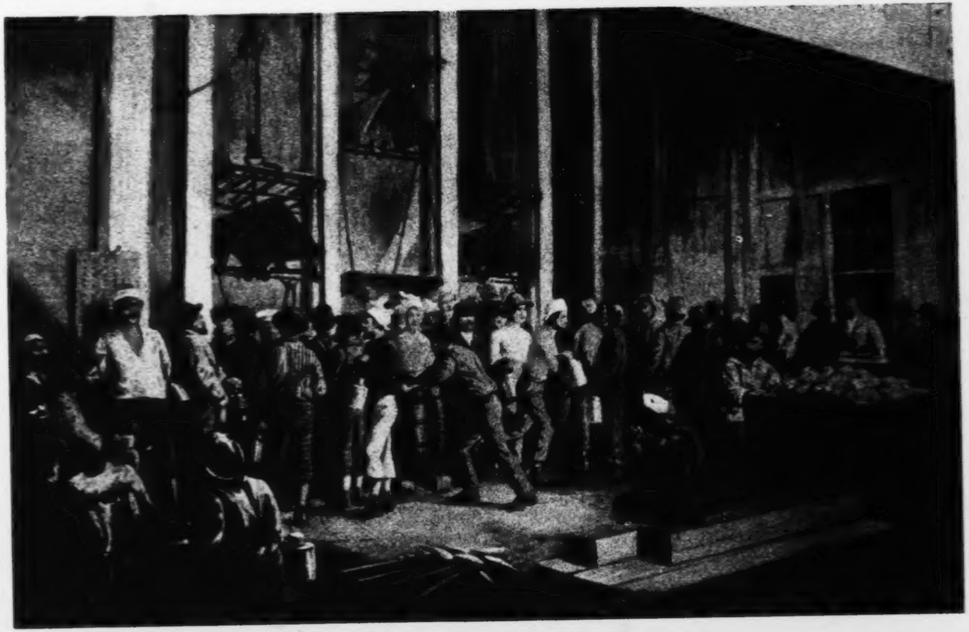
The Comstock, though called a lode, is really a broad metalliferous belt or ore channel. It contains many narrow lodes, disjointed strata, bunches and chimneys of ore, in distinct clefts, separated from each other by what the miners call "horses" or fragments of rock from either wall—fragments often a thousand feet long and several hundred feet thick; separated also by seams and patches of clay, gypsum, and carbonate of lime, by masses of quartz and dikes of porphyry. The minerals found in this great mass include native gold, native silver, stephanite, chloride of silver, galena, antimony, and several rare forms of silver, besides zinc blende, iron pyrites and copper pyrites. The whole body, constituting what miners call a vein, or vein matter, is lodged in a system of fissures rather than in one great fissure, and is walled in on the west by granite-like diorite which composes the mass of Mount Davidson and of other peaks and ridges. On the east side the hanging wall is diabase, which resembles basalt. But these irregular boundaries which confine the vein matter are merely the shattered edges of the vast chasm rent apart, closed together, and again forced asunder during the ages of volcanic action. Under interior chemical and dynamic agencies reefs of quartz a hundred feet thick have been ground to dust, and the whole seething caldron of steam and fire, filled with minerals in solution, has slowly cooled and settled into its present condition.

The general direction of the vein is north and south, or rather it points a little east of the magnetic pole and conforms to some extent to the trend of the mountain. It is customary to include about twenty-two thousand linear feet in the vein, and its width varies from one hundred to twelve hundred feet. Some of the mines in this territory have paid largely, others have yielded little, and the fertile portions are comparatively limited. The vein was at first found to slope westward under Mount Davidson, but at a greater depth the slope is eastward under Virginia City, and the miners sank a second, and afterward a third, series of shafts east of the original line of shafts. In some cases they ultimately moved three thousand feet east for convenience in working the mines. The general slope of the lode toward the east as one descends is fifty degrees.

The larger mechanical problems connected with any mine relate to reaching and removing its various ore bodies; to preventing caves, fire, and other accidents; to efficient lighting, drainage, and ventilation; to obtaining in abundance the two essentials of mines, mills, and camps—wood and water; and, in conclusion, to the creation, maintenance, and constant enlargement of the whole mining enterprise and of its innumerable dependent industries, until, after the lapse of years, the mine or group of mines is worked out. One can easily see that all this implies the constant existence of a vast reserve force at or near every mining centre. There must be forges, foundries, machine shops, sawmills, upon a large scale; the finest specialized talent must be within reach; inventors and men of original power are in demand, for not only fame and fortune, but life and death hang on the issues that an hour may bring forth. That which is needed in a great mine can and must be had. "Impossible" was never written in the miners' dictionary.

The first serious mechanical difficulty that the early Comstockers had to surmount was forced upon them within a year or two, and the result was of profound interest to miners everywhere. Old Ophir, which had "paid from grass roots down," soon discarded the hand windlass and buckets with which it had started and put in a horse power, or "whim." After a few months a fifteen-horse-power steam engine was obtained to pump out the water through a four-inch pipe, to hoist ore, and carry men up and down. This engine was the "finest thing of its kind on the Comstock" when it began operations.

Meanwhile, as Ophir's incline slowly descended, the rich vein grew wider and softer, until at the depth of one hundred and seventy-five feet it was forty or fifty



Changing Shifts at the Consolidated Virginia Mine.

From a Painting in the Main Office.

feet across and of so crumbling a nature that pillars could not be left in sufficient numbers to support the roof. The ore body, a true bonanza, continued to widen as it descended, and soon the miners found it impossible to take out any more rock without extreme danger. Work was finally stopped in the mine, for the whole mass of vein matter and overhanging rock was slowly descending upon them. If the contents had been diamonds instead of thousand-dollar tons of ore, the miners could not have taken out any more without inventing some new system of operation. The engineers were stumped also; there was no record of such a width of ore in any of the mining authorities.

Of course there had been timbering done from the first. Posts and lintels had been used in shafts and drifts. In this system, the only one then known, round logs were set up at the sides, and another log was placed across them at the top as a cap. These frames were put as close together as possible, making a continuous sheathing of pine logs a foot or even two feet thick from the surface of the ground to the bottom of the incline and along every portion of the various drifts. In some cases the logs were rudely squared and then clamped and bolted together so that it would seem as if they would withstand any pressure. In ordinary mining much lighter timbering than this often proves sufficient, but in the Comstock the great width and the varying density of the vein matter made the slacking and swelling of the ground something unparalleled in mining history, and twisted the timbers awry in many instances. Besides, the miners could not work above or beneath such timbers without danger of deadly caves. Several, in fact, occurred, and a number of lives were lost.

In this emergency a German miner in California, named Philipp Deidesheimer, who had been on the Pacific coast since 1851, came to the rescue. One of the San Francisco directors of Ophir, sending for him, asked, "What would you do if you had a quartz lode fifty or sixty feet wide?"

Deidesheimer replied that he had never heard of such a thing, but he had no doubt it could be handled. He would like to study the place.

"Go to Virginia City to-morrow at our expense," said the director.

Deidesheimer went down the Ophir shaft, and within a month, most of which time he spent underground in various tests and experiments, he began to open up what Ophir miners called the "third gallery," a chamber cut in the vein two hundred and fifteen feet below the surface. It was noised about that Ophir was about to try a new system of timbering, and, as the old method had been proved inadequate in other mines, the men stopped work and came up to see the carpenters framing above ground the "square sets" that Mr. Deidesheimer ordered. They looked very insignificant, and some were disposed to laugh at the performance.

"Square sets" consist of short, square timbers, four to six feet long, mortised and tenoned at the ends so that they can be put together in a series of interlocked cribs and built up in a continuous row or block to any desired height or width, filling the whole chamber as fast as the ore is removed. By using diagonal braces they can be indefinitely strengthened, or made to fill a chamber of any shape. They can be framed together solidly, as is often done, so that the ore is replaced by a mass of lumber, or waste rock can be used so as to make solid pillars from floor to roof, or even to fill the entire space. By February the Ophir mines were successfully "stoping out ore" from wall to wall across a deposit which was sixty feet in width and yet was so soft that no blasting was required. By the time the sixth gallery was reached a space two hundred feet in length, sixty-five feet wide, and five hundred and sixty feet in depth had been emptied of ore and was kept from falling by means of the square-sets system of support. Beyond a doubt "square sets" could often be used to support the roofs of coal-mines, where so many caves occur when the whole vein is removed.

German, English, and French engineers came from Europe to examine and report upon the new Comstock system of working ore bodies. They declared that it "could no more be improved upon than the cells of a honeybee." In soft rock and hard rock, at any angle or across any distance, the square sets became indispensable to all miners working large ore bodies. The idea was never patented, and so it became the common property of mining men the world over. It was the first of the famous Comstock methods that gave the lode a reputation.

But although every one recognised the importance of Mr. Deidesheimer's invention, which at a single stroke had solved the first practical difficulty that confronted the early miners, his system was often carelessly and grudgingly used. Cave after cave occurred, filling up the excavations, crushing men and timbers together, and rending the surface of the earth into chasms. None of these caves occurred in Ophir, of which Deidesheimer was now superintendent.

The dangers that were obviated by the proper use of the square-set timbers are well exhibited in these early caves. Few occurred in 1861, but in the spring of 1862, when the snows melted and the surface waters of the Comstock increased in volume, clumsy superintendents suffered, for a number of mines were closed by falling *débris*, clay, and rock. A few mine owners heeded the warning and put in better timbering when the drifts were cleared. Mexican—which, as previously noted, was very old-fashioned in its methods—became in the summer of 1863, as the Territorial Enterprise said, "a lovely chaos." One half the surface of the mine fell with a frightful clamour which roused Virginia City, and an acre of the surface was opened to the depth of nearly two hundred and fifty feet, as if dynamite had been exploded underneath. There had been incessant and unmistakable warnings for weeks and months; the workmen had reported props twisted and bent, cap timbers broken, and dull noises of yielding earth and quartz. The superintendent and twenty miners were below, but, fortunately, were near the bottom of the incline, and so escaped, while the enormous mass, already beginning to fall, had half closed the passages.

While the miners were learning how to protect their shafts, drifts, tunnels, chambers, and various underground workings, the enemy of all miners—water —was becoming the chief obstacle. Noachian deluges of water, seeping continually out of every part of the porous vein matter which received the drainage of the mountains, threatened to compel the abandonment of the Comstock, as a similar reason had caused the ruin of some of the most productive mining districts of Spain, Mexico, and Peru. Durango's famous Real del Monté mine was flooded for fifty years. The other day, in California, a mine was pumped out which had lain useless since 1860, and it is now yielding at the rate of $50,000 a year.

By 1861 Ophir had a pumping engine of forty-five horse power to raise the water to a point where it could be discharged through a tunnel, and ten or twelve other pumping engines were on the lode then or soon after. The miners had learned to avoid as far as possible the wetter points of the lode and the water reservoirs in clay, but this system of creeping past the worst places could only be a temporary expedient. Sometimes the careless stroke of a pick cut into a "water pocket" and forced the men to run from the drift, pursued by a torrent. Large areas of profitable mining ground were neglected through fear of the water, and sometimes drifts had to be closed by walls of masonry. Fortunately, at this stage of affairs the water was comparatively cold, not boiling, as afterward on the lower levels.

Larger pumps were placed on the leading mines. Best and Belcher, in 1864, bought a pump of twelve inches bore, and were then able to reopen some of their underground works. Crown Point, Overman, Ophir, Justice, Uncle Sam, and Yellow Jacket won undesired pre-eminence as "wet mines." Ophir struck a water pocket in 1864 that rose one hundred and sixty feet in the shafts and long defied the pumps. Belcher, when lifting 1,017,878 gallons every twenty-four hours, found the pumps too weak to extend work below the 420-foot level. Engines of five hundred horse power were put into operation, and the finest inventive skill of the Pacific coast was called into service.

There came a time when eight or ten million gallons must be lifted daily from the Comstock. More powerful pumping machinery than ever before used in the history of mining was constructed to drain the lode. The iron works of San Francisco became known for the excellence and originality of their mining machinery. Comstock pumps, by a number of successive adaptations and small inventions rather than by any single epoch-marking discovery, reached the highest degree of efficiency known to engineers.

Pioneer Virginia City had numbers of wells and a little water from springs. Some of the wells were soon drained dry by the mining shafts and tunnels. In the local phrase, the "bottom fell out," and the term was soon applied to any sudden collapse in the stock market. There were instances on record of men who were drawing water in their back yards being surprised at seeing the water suddenly disappear in a chasm or crevice, some drift or "upraise" in the vast underground world of the Comstockers having tapped the reservoir. The springs in the district, small and few in number, suffered in much the same way.

Even the surface water of Gold Hill and Virginia City was abominable, even to those used to the bitter water of the desert. It "alkalied people" in the concise southwest phrase—that is, it often made them weak, and acted something like a dose of physic. One or two surface springs fed by snows were better, but these were very small; and as for the water from wells, nothing could easily be worse except the water from the lower levels of the mines. Ross Browne, in his Peep at Washoe, remarked that the water was certainly the worst ever used by man. The miners, humbly desirous of improving the quality of their drinks, used to mix "a spoonful of water with half a tumblerful of whisky."

Evidently the highly mineralized vein matter of the great fissures, such as the Comstock and others, was more or less a part of every cup of water. The dream of the alchemists of silver and of gold in potable form was realized, and still the Comstockers were not happy. Antimony, copperas, arsenic, and a few other substances quite as injurious to health were present in the water. Nevada papers printed innumerable items, grave and gay, on the subject of Virginia City water. They assured the ladies that nothing else was half so good for the complexion as arsenic water; they congratulated the men on their improved lungs and capacity to climb to the top of Mount Davidson (like so many young Malcolm Græmes breasting Ben Lomond).

Then followed, to make a long story short, a search for water of good quality and abundant in quantity. It must be had at any cost. When there were only two or three thousand people in Virginia City and along the divide, men were tapping the adjacent peaks with short tunnels, trying to find water. When the population increased tenfold and twentyfold the problem was even more pressing. A "water-claim" excitement had set in, until hundreds of men were prospecting in the hills to find and reservoir water. They searched the flat-topped hills and heads of ravines; they tried to save water from the melting snows and keep it pure and cool for summer use. Miles upon miles of tunnels were blasted out of the granite and other hard rocks and walled up at their entrances. Old shafts, long abandoned, were also utilized as reservoirs. The barren, treeless hills north and south along the ridge of the Washoe Mountains were bored into in this manner, and the water from a thousand such sources was carried in pipes or small wooden flumes to Gold Hill and Virginia City. Nevertheless, the supply fell short every summer, and the natural reservoirs of water in the hills appeared to lessen very noticeably until the situation became even more serious.

While mills, mines, and growing towns were suffering for a pure and sufficient water supply, the Sierras were overflowing with pure mountain water, and thither the energies and capital of the Comstock were to be directed. For a time the project, though often urged, lay dormant. At length, after a season of extraordinary drought, the miners, accustomed by this time to daring enterprises, formed a company and began surveys to the Lake Tahoe region.

The complete story extends over a long period, but it properly belongs here, as the culminating achievement in the line of mechanical problems. Distance, though about twenty-five miles over a rough country, was the least of the different elements to be considered by the engineers. They found that it was practicable to carry the water from a large mountain stream, Hobart Creek, by a fourteen-mile flume along a spur of the Sierras, to a point nearly two thousand feet above the floor of Washoe Valley. But Washoe, Carson, and other valleys formed a complete chain of depressions about the Virginia City region, and isolated the Washoe and Flowery ranges. They wanted to carry the water across this trough-like valley and deliver it at a point 1,720 feet higher, on the Virginia Ridge, so as to supply the towns and furnish hydraulic power. Clearly it was not practicable to pump nearly eighteen hundred feet, as the cost of the machinery and expenses of operation would be prohibitory. Mr. Henry Schüssler therefore advised the construction of an inverted siphon which could stand a pressure of eight hundred pounds to the square inch, the equivalent of a perpendicular pressure of a column of 1,720 feet of water. Pipe sections twelve inches in interior diameter had to be united hermetically. The length required to cross the valley was 38,300 feet.

It took a year to make the pipe. Each section fitted a particular place. Every curve and angle of the route was mapped out and measured accurately, and the wrought iron used corresponded perfectly with the diagram before it left the workshops. The pipe undulates into and out of thirteen steep gulches, and makes many lateral curves. It is laid deep underground, and at each point of depression there is a "blow-off" cock, to drive out any sediment. On the top of each ridge is an air cock. There are 1,150,000 pounds of rolled iron in the seven miles required for the siphon, and it is held together by about a million rivets and fifty-two thousand pounds of melted lead. Over each joint is an iron band set with molten lead, and 442,500 additional pounds of iron were used in this way.

At last, in 1873, water leaped out of the pipe into the channel of Bullion Ravine and flowed into a flume that carried it into Virginia City. "The crowd were as wild with joy as were the Israelites when Moses smote the rock," said the Territorial Enterprise. All day long the people of the towns drank the sweet water and watched its musical flowing. Two million dollars had been well spent to supply the Comstock with water from the Sierras. The total amount furnished was about two million gallons daily, but it was insufficient, and after the great fire of 1875 a second siphon line was laid. A third line was afterward constructed and ample reservoirs provided. The theoretical capacity of all three pipes is about ten million gallons daily, curiously corresponding to the amount of water lifted at times from the lode, but six million gallons was about the highest daily consumption. The mines used the larger part of the supply.

Previous to the successful laying of the first Washoe Valley siphon the greatest pressure under which water had ever been carried, so far as known, was at Cherokee Flat, California, where the supply of a large hydraulic mine was taken across a cañon nine hundred and ten feet deep by an inverted siphon. The fame of the Virginia City exploit went abroad and attracted more engineers to study the water system than even the mine timbering or the great Comstock pumps.

Thus, while the miners were laboriously running drainage tunnels and pumping out floods of worthless water, they were also siphoning their drinking water from the Sierras, and in such a manner that several hundred feet of fall was obtained for the development of hydraulic power, all of which was soon utilized to run pumps, to furnish electric lights, and for a vast number of milling and mining purposes.

CHAPTER XII.

DEPENDENT INDUSTRIES.

IT is difficult to classify all the different types of men who help to make a mining camp. Certainly the prospector, the miner, and the mill builder form the central group, but hardly less important and equally interesting are the freighter, the lumberman, the builder of roads, the stage driver, and others who deserve more than passing notice. One can hardly say which of these comes first in point of time. The mines needed lumber and firewood from the day of their discovery. Building of roads began at the same time, and freighting and stage driving were easy to men who had taken trains of donkeys and pack mules across the Sierras when the rush to Washoe began.

All the summer and autumn of 1859 new trails were being hewn out on the sides of the Sierras and the old ones were being broadened so that a wagon could cross. The famous old emigrant road through Johnson's Pass from the head of Carson Valley to Placerville (in old days known as Hangtown) had once been worn down to something like a practicable grade, but travel along it diminished so rapidly after 1855 that much of it had fallen into very bad condition. The second great route, already marked out by a road that could be used in summer, was by way of Nevada City and Henness Pass.

During 1860 the usual method of the miners who wished to open a new district rapidly—the building of toll roads—was adopted. In fact there had been a little toll-road work in Western Utah before 1859, and the greater number of the fine mountain roads of California in the '50's and '60's were built and kept up by private enterprise. Some of them were more profitable than most of the mines. The Territory of Nevada had hardly been organized before a fierce contest between those who desired toll-road franchises occupied the first session of the Legislature. Dan De Quille said that if all these franchises had been granted and the roads built, they would have not only filled the Territory, but would have hung far out into the desert like a fringe.

Neither California nor Nevada has since had mountain roads under the ordinary laws of public construction and maintenance, by local districts or counties, that begin to equal the firm, broad turnpikes of the old toll-road days. This is true even in those districts where the population has remained fully equal to that of thirty years ago. The noble art of making highways worthy of the alpine passes was lost when the teamster and the freighter disappeared.

The main Placerville toll road in the days of its completeness—from 1862 till 1868—was graded with consummate skill from the edge of the Sacramento Valley across the Sierras, across the Carson, and up Gold Cañon to Virginia City. At all the turning points were wide platforms walled with stones, firmly buttressed against storm and avalanche—platforms so broad that a ten-mule team could easily turn upon them. Trains of twelve or even eighteen animals harnessed to three wagons joined in line together could pass at any point on the roadway. Half a million dollars was the original cost of this macadamized road a hundred and one miles long from Placerville to Virginia City. The yearly expense of maintenance was two, three, or sometimes five thousand dollars a mile, according to the season. Stations were built at regular distances, and in winter the road was kept as clear from snow-drifts as it was kept free from dust in summer. Swan & Co., who owned some twenty miles of the distance, received fifty thousand dollars annually over and above the cost of maintenance. The total cost of tolls between Sacramento City and Virginia City in 1863 was about fifteen dollars for a four-horse team; each additional animal cost a dollar and a half.

Between 1860 and 1862 four-mule teams were commonly seen, but after 1862 the number increased, for the roads improved and the teamsters knew their business better. One saw sixteen mules harnessed to a high Washoe wagon or to a train of three or four wagons coupled together. Similar outfits often extended for miles in such close lines across the highway that it was like a double procession. If a wagon broke down, the moving line swung around it if possible and went on unless help was needed. If an unlucky teamster fell out of line he sometimes had to wait for hours before he could fall in again.

Four hundred teams were being used in 1860; six hundred were engaged in 1861; by the summer of 1862 the San Francisco Bulletin said that there were nine hundred and fifty teams in the business, and the freighters were paid not less than three million dollars, including tolls. In 1863 came a great increase. According to an editorial in the Sacramento Union, 2,772 teams, consisting of 14,652 animals, were employed, and nearly twenty million pounds of freight passed through Strawberry Valley in eight weeks, which represents one third of the season's work. Another estimate was that eighty-eight million pounds of freight went over Johnson's Pass every year, at an average cost of six cents a pound, or $5,280,000. A more complete estimate was made by the builders of the Central Pacific Railroad. Anxious to determine how much business they could reasonably expect when their lines crossed the Sierras, they sent out agents who, after investigation, thought that one hundred million pounds really went by the Placerville route and half as much by the other routes. Fifteen thousand draught animals and three thousand men were employed in this great industry. Nearly a hundred stations, at each one of which there were stables, hotels, saloons, and stores, were built on the Placerville route. The road was a continuous double line of close-packed travel all summer, and life on the famous highway was infinitely more picturesque than on any railroad.

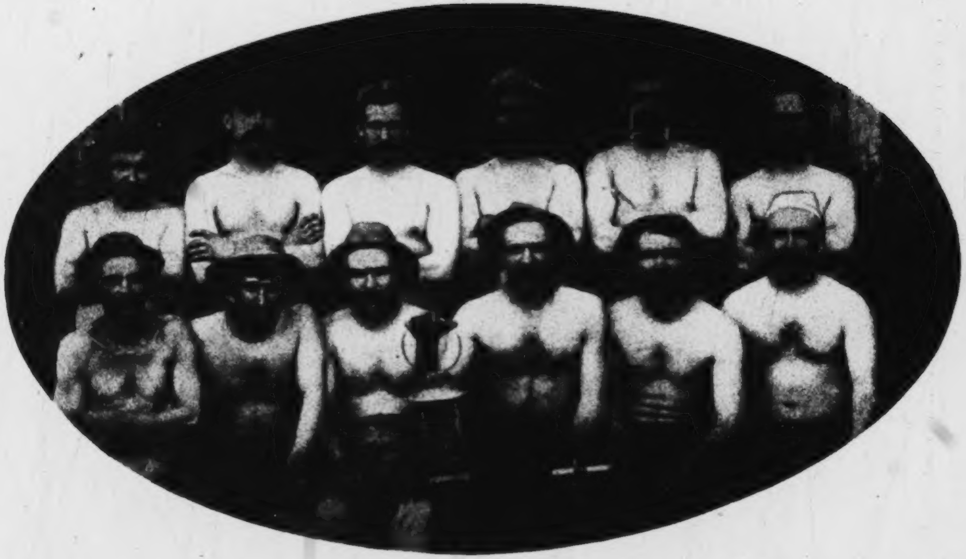
These trains of mountain wagons—slow-moving, vast—contained dry goods, provisions, tools, machinery, and merchandise of all descriptions produced in every part of the world, shipped to San Francisco across the Isthmus or around Cape Horn, reshipped to Sacramento, and there loaded into the waiting caravans. It is easy to see that this swiftly developing traffic made towns and cities spring up in a single season along its track. But there was more to the business than this single river of commerce flowing through the Golden Gate to Nevada. It was a river that received countless tributaries. It was fed ceaselessly by almost every man, woman, and child in ten thousand square miles of mountains. The mines made a better market than the valleys for hay and grain, for fruit and wine, for hogs and cattle, for eggs and poultry. Neglected pioneer orchards and vineyards were pruned and cultivated, so that the grapes, apples, peaches, and other products of old-time California horticulture might be sent to the new camps of Nevada, where they brought almost the old prices of '49.

The appearance of Washoe wagon trains was always extremely striking and attractive. The wagons were peculiarly effective for the work required. They were not prairie schooners, or ships of the desert, or square-built ore wagons, but better, stronger, higher than any of these, and supplied with brake blocks that could be gripped by a lever upon a yard or more of the periphery of each hind wheel. They marked in every detail the utmost skill of the Pacific-coast workers in wood and iron, and were in their way as distinct creations of adaptive and evolutionary genius as the mountain stagecoach of the period or the Mississippi River steamboat in days before railroads. Of course many different types of wagons were pressed into service, the demand being so great, and one could see the famous Conemaughs, Missouri sail-tops, lumbering ranch wagons, and other types of Eastern manufacture. But the wrought iron of the California blacksmith, the imported ash and hickory shaped by the California carpenter under the direction of the leading spirits of the freighting business, made the most popular combination, though it cost two and three times as much as the imported article.

Horses could not stand the work, oxen were too slow; but large, well-bred mules, which cost from two hundred to four hundred dollars apiece, were the favourite draught animals. Oregon furnished many, and stock farms in the California valleys, chiefly owned by Southerners who selected their stock with great care, sold thousands of mules to the Sierra teamsters. Fine, strong animals, kept constantly groomed and in the best possible condition, were in these mountain mule teams. The long trains came gaily into Virginia City after crossing the Sierras and climbing up from Carson Valley. Each animal had a row of small bright bells hanging from an iron arch over his neck. Great squares of combed and glossy bearskin—black, brown, or grizzly—covered the collars. All the metal of the harness glistened in the sunlight, while the leather was clean, flexible, and black.

Bearded, weather-beaten men walked beside the wagons or rode one of the mules, or sat at times on high, perched dizzily on the wagon seat above the tarpaulins which were always strapped carefully over the goods to prevent their being injured by dust or by sudden Sierra storms. Mark them well! No better race of sturdy, faithful mountain men were ever bred in fruitful America. Not merchants these, or prospectors, or speculators, but a brave, honest outdoor race whose huge Washoe wagons were the forerunners of the railroads. It was their business to furnish supplies to the miners and to all who lived by the work of the mines, but many of them went through all those pioneer years without ever entering a mine or owning a dollar's worth of stock in any one of the thousands of mining claims they passed and repassed.

Where this army of freighters came from no one could tell any more than one could classify the prospectors. A large number, however, had been the owners of mountain ranches before the rush to Washoe began, and had taken their own teams for the new work offered. Then, as their capital increased, they bought better wagons, better teams, and so still remained their own masters, occasionally hiring assistance or having outfits to rent, but always taking the brunt of the work on their own shoulders. Some of them were from the desert, where they had freighted goods for years to



A Group of Comstock Miners.

the isolated settlements; some were from the high passes of the Rockies and had heard the whistle of Indian arrows in fortress-like camps with fellow-teamsters, wagon locked with wagon, a ring of wheels set with rifle barrels. A few gray and taciturn old freighters had once belonged to that fighting advance guard of the Americans, the famous teamsters of the New Orleans and St. Louis caravans on the old Santa Fé trail.

These freighters were noted for their honesty, sobriety, and business-like attention to every detail. Each one of them had thousands of dollars' worth of goods intrusted to his care without security other than his simple receipt. He carried these goods to the mines and delivered them to the consignees, taking their receipts. If there was ore to be freighted back across the mountains, he loaded up at the mouth of the mine, gave the mine owner his receipt, and took one in turn from the Sacramento banker or the speculator in ores.

The freighter's characteristic rod of empire was his whip—a long, close-plaited lash as big as one's wrist at the swelling part, and attached to a short hickory handle. When he held the staff upright and slowly waved it from the roadside the intelligent leaders would obey every motion, turn a loaded wagon or halt at the command, for they knew by sad experience the capacity for inflicting punishment that lay hidden in that serpentine coil, terrible as a South African jambok of green hippopotamus hide. The freighter's besetting sin, like the soldier's, was the uttering of "strange oaths," though it is said that in this respect he yielded the palm of fierce originality to the "bull-puncher," the man of ox teams in the logging camps.

Organization soon began to manifest itself among the freighters. They had an association to fix rates before the close of 1860, when twenty-five cents a pound was the usual sum charged between Sacramento and Virginia City. Rates necessarily came down, as outsiders entered the business with all sorts of conveyances, so that for a short time in 1862 goods were hauled for two cents a pound. But the freighters, nearly all of them owning their own teams, soon formed a Union that remained impregnable until the railroad was built. The equipments of the members of the association were so complete that they could do better work than any ordinary teamsters. At first they were able to haul a thousand pounds of freight for every animal used, but eventually they became able to move three times as much—sixteen-mule teams actually drew twenty-four tons besides the wagons.

In the course of time, as mining camps were founded here, there, and everywhere beyond Virginia City north, south, and east, the sphere of the freighter was extended, and retiring slowly from the Sierras as the railroad advanced, he became one of the most distinctive and universal characters of the Nevada mining districts. Dr. Gally has forever fixed the type in his Big Jack Small, a famous story of the desert, whose hero is a plain old ore freighter of the Elko silver district. Considered as pure literature, the story is not inferior to Bret Harte's earlier tales of the California placer camps; regarded simply as crystallized fact, it would be difficult to find its equal in the whole range of Western writings. The school of the independent freighter—the Jack Small kind of a man—trained some of the most able business men, politicians and owners of stock farms, on the Pacific coast. Lastly, it is to be noted, in bidding the freighter farewell, that stage robbers and highwaymen stood in deadly fear of his six-shooter and rifle. So far as I can ascertain, no case of loss of goods in transit, either by fraud, force, or carelessness, during all the years of the freighters' glory is on record in courts or newspapers.

Besides the freighter, the great mountain highways fairly swarmed with travel of other sort: men on horseback or in buggies and other conveyances; farmers with country produce; the blanket-brigade prospectors with pack donkeys; drovers with sheep, hogs, and cattle. All were interesting, but the stages, owned by different companies and making a business of taking people to and from Washoe, were the most striking features of the procession.

One stage company, the Pioneer Line, owned twelve fine coaches in 1863, and carried nearly twelve thousand passengers from California to Nevada and eight thousand back to California. The fare was twenty-seven dollars from Sacramento to Virginia City by the Placerville route. The annual receipts were about five hundred and forty thousand dollars, besides a liberal United States allowance for carrying mails. Six or seven hundred horses were in the stables, and scores of men were employed in caring for them. The stage drivers were aristocrats of the road, receiving from two hundred to two hundred and fifty dollars a month besides unlimited adulation.

Two other companies, the California and the Nevada, used the Henness Pass route, and carried between them about as many passengers as the Pioneer Line. Now and then competing lines were put on, but as the first companies in the field had taken possession of most of the possible locations for stage stations, they held a practical monopoly of the business. In 1863 the three companies received about $1,200,000, and the annual amount probably increased considerably above this figure before the staging era came to an end.

The stage ride across the Sierras became known abroad as one of the New World's unique pleasures. Tourists admired it greatly and called it the glory of the journey across the continent. First the rich Sacramento Valley in the heat of summer, golden with harvests for miles under the park-like forests of giant oaks, and beside the rivers lined with maples, cottonwoods, sycamores, and festooned with wild grapes; next the foothills, low-mounded, clothed with late flowers, shrubs, and scattered trees, full of springs and bright with fruitful orchards and gay gardens; then the forest belt, the noble coniferous forests of the Sierras, the pines and cedars, the scattered groups of Sequoias, the mountain laurel, ceanothus, azalea, dogwood, and wonderful natural growths of the Great Range. Everywhere new landscapes met the gaze; at each new turn the traveller saw lakes, waterfalls flinging their spray upon the road, ice-cold springs bursting forth and slipping down the hillside through wildernesses of tangled bloom. He looked down dizzy precipices upon the tops of giant pines; he looked up to arching forests overhead, and far above them the barren granite crags, snow-crowned, gleaming against the sky of heaven's clearest, most cloudless blue. From the summit of the Pass they saw the hyacinthine waters of sealike Tahoe, and farther east, beyond sharp descents and treeless hills, the level desert stretched out of sight, seemingly as vast and as trackless as ocean itself.

Such were the general features, with infinite variations in detail, so that even old stage drivers were heard to say that they enjoyed the outlook more every time they crossed the summit. Springtime in the valley meant alpine winter on the heights. Summer in the farm lands meant the flush of spring in the passes, where brilliant blue and golden flowers and new grass were just looking forth at the edge of the snowdrifts. As for the desert, it was like the mountains and the ocean, a thing of infinite moods. Into that corrugated basin the short, swift streams of the eastern slope of the Sierras descend to disappear; the "eastward-gazing grizzly bear," to quote from one of Dr. Gally's stories, "lifts his flexible nostrils to snuff the odours of the arid waste, then slowly turns and prowls westward." Beyond is the "great empire of Artemisia," where gold and silver "were married in the volcanic chamber of the awful past." You see the nature of it from the mountain top—this land of Washoe with its browns and grays, its arid junipers and dull nut-pines on the rocks, its dark mountains of limestone, basalt, porphyry, granite, in naked barrenness. "Underfoot," writes Dr. Gally, "the world is dark, gray, and silent. Overhead, during the long cloudless day, it is pale-blue, dry, silent. All abroad, it is gray or dark with mountain distance, and it is silent." Silence is everywhere. No "roar of far-off torrents tumbling down the hills to jar the night air underneath the stars—the stars still are, but all the torrents have departed." Time was, at some lost period backward of all dates, "when the Great High Sheriff of the Universe in open court has cried 'Silence!' and has been obeyed."

All day long, from dusk of dawn to twilight, the swift, hard struggle to get mails and passengers across the Sierras continued. At times relays of coaches were kept up all night, with profit to the companies. Never before in the history of transportation was the tireless energy of men and animals and the value of thorough organization and lavish expenditure better exemplified than during the best days of the old Pioneer stage line.

The schedule time by stage from Sacramento to Virginia City—one hundred and sixty-two miles—was three days in 1860, and it was often hard to make connections; by 1863 the schedule time had been reduced to eighteen hours, and passengers could go on without stopping except for meals, or they could stay over one night on the road. Three wealthy mining operators who wished to reach San Francisco as soon as possible were once taken by the Pioneer stage line from Virginia City to the wharf at Sacramento in twelve hours and twenty-three minutes. The steamer was ready to cast off, and in less than two minutes they were on their way down the river.

Accidents occurred, as might have been expected, when several thousand men and twenty thousand horses and mules were daily strung out somewhere along the rocky highways. The freight lines opened to let the stages through, but droves of wild Mexican cattle were not so accommodating, and sometimes overturned the coaches. Masses of earth and stone slid into the road; horses stumbled and fell, dragging others with them. On one occasion a large grizzly bear ran across the road, frightening a stage team; the horses reared, ran partly around the coach, and broke the pole; the passengers "leaped off and out in every direction." A stage on Johnson's Pass once toppled over a bank and caught in the top of a tough-limbed Sierra pine; the passengers crawled out unhurt and reached the ground by dropping from limb to limb. It was a thousand feet to the bottom of the cañon where they would have landed if the pine tree had happened to grow somewhere else.

The pioneer stage driver of the Nevada-California lines was as different from the freighter as two classes of men could possibly be. One finds him occasionally in these days on the short stage lines left in the mountains, but "Ichabod" is written upon the occupation, and the whole attitude of the drivers toward life shows it. Once they took all the celebrities of the Pacific coast over the Sierras, and had the delightful knowledge that governors, generals, mine presidents, and millionaires were laying plans to cut out each other and to possess in sole ownership the "seat by the driver," the best seat on the coach. Once they were distinctly at the top of mountain society, the unchallenged lions of the wayside inns, privileged characters, story-tellers at whose slightest word the loud laugh went around. Now they drive "mud-wagons" for the most part, that two or four horses can manage. Wages have fallen to two dollars a day; horses, harness, and everything else have deteriorated in like proportion, and the fragments of the old highways are hardly as good as the emigrants of 1849 left them.

These Jehus of the '60's are better than old files of newspapers. They can give you, if they choose, the very tones in which the judge summed up his charge to some sage-brush jury, the speeches of the lawyers when Ophir was fighting Burning Moscow, the talk of once-famous operators rushing across the Sierras with relays of horses. The glow and passion of the days they love to remember lingers still in their voices; they have stories of hunters told first in camps whose very names are forgotten, stories of outlaws in the Sierras, stories quaint, humorous, pathetic, gathered from thousands of brilliant and original characters who have travelled with them.

But there is still another class of outside industries created by the Comstock. Supplies and passenger travel were not more important to the mining camps than wood for fuel, for building, and for the timbering of the shafts, drifts, and other underground workings.

Wood choppers and lumbermen have always been prominent auxiliaries of every mine. By the winter of 1866 the price of firewood rose to fifty dollars a cord, and as retailed by the Chinese with burro trains to sixty and seventy dollars. The towns and mills along the great lode used by this time two hundred thousand cords of wood annually. Since the mills managed to get their wood for ten dollars, and since all provident persons laid in their whole supply in summer, it is not likely that more than $2,500,000 was actually spent. Still, that was a very large sum to pay out for the fuel supply of so few people.

Of equally vital importance was the supply of clear lumber of the best quality. This could not be furnished by the brittle, knotty nut-pine of Nevada. A few forests were within the reach of the pioneer sawmills of Washoe and the upper Carson, but the prices were practically prohibitory of improvements. Then came an increasing demand from the lower levels of the mines, "Give us more lumber or we can not keep on drifting out ore even with our 'square-set' system of supports." The men of the mines cast longing glances over at the mighty forests of pine and cedar on the slopes of the Sierras. The bull-punchers and the small sawmills around Carson could no longer supply half the demands of the Comstock lode.

"More! More!" the insatiate miners cried, and the time came when eighty million feet of lumber annually went down into the chambers and drifts, and two hundred and fifty thousand cords of wood were burned annually by the Comstock towns and mills. The lumber that was put into the mines was crushed, forced together into solid masses by the weight of moving mountains above. One single mine has often buried lumber at the rate of six million feet a year.

It was plainly possible to continue to cut wagon roads to various points along the eastern slope of the Sierras, even to the top, and then haul logs to the sawmills in Washoe Valley. This was done for a time, and, if continued, might have developed as extensive a logging business with ox teams as the handling of supplies had already developed in the freighting line. The bull-puncher might then have become as notable and universal a figure as his brothers of the Sierra highways. But the cost of road-making was enormous, owing to the ravages of winter storms, and some better method was needed.

In conveniently steep places, where deep water could be had by a dam, or in a lake, short chutes of tree trunks were made down which large logs could be slid headlong, flaming and smoking from the friction of their rapid descent. There were only a few places where this could be done without injuring the timber. Unless the grade was very steep the logs would not slide. Various other plans were tried. Ordinary square-box flumes were constructed instead of the dry chutes, and were carried for many miles up the winding cañons.

The square-flume plan did not long remain in use, for in 1866 or 1867 experiments were made by a lumberman named Haines, in Kingsbury Cañon, with a simple form of trough that has since been adopted in every mountainous region of the Pacific coast—the famous V-flume. Haines took rough planks two feet wide, an inch and a half thick, and sixteen feet long, and joined them at right angles, lapping successive sections to make any desired length. The flume rested on the hillside, with props against the lower side, and was carried across cañons on trestle work. The next improvement was to join the sections evenly by a V-joint underneath. After a few years flumes of this pattern were made much larger and were lined with planed boards.

This invention, one of the most interesting of the mining period, came at a time when the Californians had spent large sums trying to handle cheaply and rapidly the immense bodies of timber on the long western slopes of the Sierras where several species of conifers make trees that are often ten or twelve feet in diameter and two hundred and fifty feet high. They adopted the Nevada V-flume system with modifications, placing large mills in the forests and moving the sawed lumber in form for market, millions of feet annually, delivering it in the valley below. On the eastern slopes of the Sierras the descent is much more abrupt and broken, and the trees are smaller than on the western slopes. Here the grade of the flumes was often four feet to a rod; logs and lumber were swept down in torrents of white foam, and sometimes, when jammed, were hurled into the air as if by a powerful explosive. Many mountain slopes which could never have been reached by the bull-punchers were easily cleared by using these short, steep flumes.

One of the largest V-flumes ever built in Nevada was fifteen miles long and contains two million feet of lumber. It carried five hundred cords of wood, or half a million feet of lumber, either sawed or in logs, in a single day. In 1880 ten flumes were reported by the Surveyor General, covering in all eighty miles. The amount of firewood actually flumed that year was 171,000 cords, and of lumber 33,300,000 feet. Ten and fifteen thousand dollars a mile has been spent to construct some of these flumes.

It would seem at first thought that there could be but few other dependent industries besides those already noted in this chapter, but the ramifications of the subject are almost endless. There were the foundries of Virginia City, the first one established in 1863, and soon followed by others, so that all repairs could be made for the mining machinery, and everything except the larger engines could be built. Soda, which was used extensively in the mills, was soon obtained from the desert. Copper ore, mined on Walker River, was used to make sulphate of copper, or bluestone, of which the mills used a great deal. Marshy beds of borax, large deposits of alum, and black oxide of manganese were discovered and to some extent utilized as needed by the Comstock towns.

Salt was freighted across the Sierras until prospectors developed many and extensive deposits. The first efforts to bring salt from beyond the forty-mile desert was remarkable on account of the animals used. The owners of the salt deposit sent to Asia and obtained in good condition nine Bactrian camels in the spring of 1861, and used them for a year or two. Each one carried about five hundred pounds, or twice as much as a pack mule did. They ate nearly every kind of desert vegetation, particularly the harsh "greasewood." On the other hand, they suffered greatly from the alkali, and their drivers despised and neglected them in every conceivable manner, so that the experiment never had a fair trial. In the end some of them died, some were used to carry ore in Arizona, and some escaped and have been reported at intervals by frightened cowboys or astonished tourists in the mountains of northern Arizona and New Mexico.

Thus, as we have seen, the seemingly small and incidental elements in the life of a mining camp really occupy whole regiments of men. These dependent industries were as much the creation of the Comstock as the great hoisting works, the mills, or the

Sutro Tunnel. Destroy public confidence in the value of the mines, and from that moment snows would drift unheeded over the mountain highways and avalanches would sweep them away to remain forever unrestored. Log-cabin stations would be abandoned, flumes would rot on the hillsides, and iron water pipes would rust. Orchards in the mountains would go unpruned and grapes lie ungathered except by birds and raccoons. When the toiling miner tunnelled into some new deposit of rich ore, valleys and mountains were glad because of his good fortune.

CHAPTER XIII.

MINING LITIGATION.

It would be easy to moralize about the "general cussedness" of all mining, particularly silver mining, "which is full of dips, spurs, and angles," and, like gambling, extremely uncertain. This remark applies with peculiar force to the Comstock camps. There, as Calvin would have said, the hand of Satan was daily manifest. Never since the world began were conflicting interests, honest and dishonest, more wildly entangled than in that early Nevada.

The trouble began in the carelessness, or worse, of the prospectors of 1858 and 1859. I have alluded in a previous chapter to some of their meetings to declare laws respecting claims, and to the Gold Hill blacksmith who kept his record book in a saloon where all and sundry could and did alter the entries. If properly carried out, the district regulations might have done good service; but they were so sadly neglected that none of the early miners had what lawyers would call a title. Lord, in his history, cites the example of the original claim of O'Riley, McLaughlin, Penrod, and Comstock, now held by the Ophir and Consolidated Virginia and California companies. The four men put a stake on the line of the croppings fifty feet south of the place where the strike was made, and another one fifteen hundred feet north of the first stake. This gave one claim to each of the four, and one extra claim for the discovery, which was the custom at the time. They posted no notice (as the rules required), they recorded no notice either then or afterward (expressly stated to be the most important evidence of ownership). Then came one James Cory, a chum of Comstock's, and asked for a share. Not receiving it, he posted a notice and claimed four hundred and fifty feet adjoining the claim of Comstock & Company. This was half as much again as he had a right to under the district laws. Big John Bishop and a miner named Camp told him that it was their ground, and the three finally divided but did not record the claims. Several other overlapping claims were made informally, and shortly afterward the miners discovered that upon one part of the lode, seven hundred and ten feet long, they had actually taken up and recorded fifteen hundred and fifty feet! Compromises and various readjustments followed, but so obscure and conflicting were the records and the "memory of witnesses" that titles in this part of the Comstock have always been unsettled.

There is a very strong reason in the nature of mines and miners for many of the delays in properly defining a claim. Every part of a ledge is not equally rich. Ore occurs in "seams," "chimneys," or "chutes," and as soon as a man "struck it rich" his first thought was usually to explore it until he could select and stake out the best three hundred feet. Nearly all of the early locators on the Comstock were trying to get the richest slice in the lode, and they kept away from the recorder's office; or if they entered a claim, they took care to leave it in such shape that it could be altered, like some of the Spanish land grants of California that were "floated" ten or fifteen miles, much to the subsequent profit of attorneys.

Even when the "metes and bounds" were well defined the guileless miners could not always be depended upon to leave them so. One of the pioneers mentions a mining suit in which the matter hinged upon the location of a stump that marked the corner. Judge and jury adjourned and went to look at the stump. It had been dug up bodily during the night and carried off, and the ground was so levelled that not the slightest clew remained. Each side accused the other, and the case was never decided.

All the American mining camps have maintained in the case of quartz ledges the right to an inclined location—that is, the right to take a claim of definite size and follow it downward at any angle or angles, taking all the ore in the vein and in its legitimate branches. A miner, according to this idea, takes up a piece of ground simply for the lode, and goes wherever it goes. Spanish mining law, on the contrary, recognises only the square location. According to the Spanish plan, as soon as a ledge passes beyond the boundary of a square piece of ground of given size it belongs to the man in whose tract it lies. One can easily see that the Spanish system must prevent much trouble and render the single-vein problem immaterial. In fact, it rules out of court nine tenths of all the cases that lead to lawsuits. Matters rapidly went from bad to worse on the Comstock until the most casual observer would have seen a wild Walpurgis-night revel of conflicting claims of every size, shape, and age tumbling over each other three and four deep. It is hardly surprising, for the Comstock was not the only vein on the side of Mount Davidson, nor even the most prominent one. The Virginia lode was nearly parallel, and other veins, too many to name and hardly worth while digging up from the dust of forgotten records, crossed and recrossed the original Comstock until even ideally honest and painstaking miners, geologists, and courts would have found it impossible to straighten out the tangle that began when the first stake was driven at Gold Hill. When, as of course soon happened, the miners became very much excited, when courts and lawyers were subjected to enormous temptations, and when it was found that geologists and mineralogists could not settle the question beforehand, the result is easy to sum up. Everywhere in the period of litigation there were almost inconceivable expenses, ruining the lesser mines, preventing dividends even where miners were working rich bodies of ore. Titles were clouded for years, and the finest legal intellects in America wrestled on the Comstock in cases that are still famous.

Let us turn again to the genial Ross Browne for a characteristic picture of the contentious miners. He says that when he entered Virginia City by way of fitly-named Devil's Gate a fraction of the crowd "were engaged in a lawsuit relative to a question of title. The arguments used on both sides were empty whisky bottles, after the fashion of the Basilinum or club law which, according to Addison, prevailed in the colleges of learned men of former times. Several of the disputants had been already knocked down and convinced, and various others were freely shedding their blood in the cause." The Comstock ledge, Mr. Browne thought, was very fine, but it was held at a thousand dollars a running foot "when not even the great Comstock himself could tell where it was running to." The whole region was in the midst of a free fight among the various claimants. The Comstock was "in a mess of confusion." Its shareholders had the most enlarged views, but those who had struck croppings around the Comstock were just as liberal in their ideas, so that, in brief, "everybody's spurs were running into everybody else's angles." The Cedar Hill Company was spurring the Miller Company, the Virginia ledge was spurring the Continuation, the Don Company was spurring the Billy Chollar, the Washoe was spurring everything else, and all these, the Comstock, and a dozen others, were interlocked spurs with spurs and angles with angles, like a Chinese puzzle.

A study of the map of the United States Geological Survey, showing the locations at even a later date when many of the earlier claims had been consolidated out of existence, will convince any one that the preceding description of the Gordian knots left for the lawyers are only the merest glimpses of a state of things that should never have existed, and that cost the young mining communities of Nevada uncounted millions. Still the age of litigation, here as elsewhere, only proved the existence of a rich camp. Men do not fight "like grim death" for worthless ground.

Contests in the courts began as soon as the prominent mines had cut far enough into the ore bodies to be ready to infringe upon each other's claims. The real geology of the district then became a pressing problem. Since the miners were determined to hold fast to the "inclined-location" method, the main problem was as follows: Were the quartz bodies narrow veins separated by barren rock, or was all the vein matter deposited in one great irregular fissure, partly filled with wedges and masses of porphyry? Did the Comstock really consist of a single vein, or was it a multiple vein? Such were the questions that divided the miners into two hostile camps. What is now universally recognised as a monster lode then seemed to consist of a number of narrow, well-defined ledges, two of which were very prominent

But to call the system a single lode was to entitle the first locators to divide among themselves nearly everything along the hill slope and over the whole Comstock basin, and the rows of later locations, east and west, were annihilated at a blow. Even the Californians who had bought out the original claimants of the Comstock did not dream of such wide-reaching ownership. Besides, the great majority were outside, and naturally held to the popular many-ledge theory. A few strongly organized and wealthy companies, holding what turned out to be the main ledge, ultimately decided to push the single-ledge theory, but at first all the evidence was dead against them.

Since the Comstock near the surface dipped toward the west, it separated more and more from the line of claims on the east, and the first conflict was therefore with the nearest line of claims on the west. The small ledges here seemed very rich and were perpendicular, or nearly so. Thus the sloping shafts of the Ophir, Mexican, and other mines soon came in contact with the vertical shafts on what was termed the "middle lead." The result was the case of Ophir *versus* McCall, which came up in Genoa, September 3, 1860, before Judge Cradlebaugh in the loft of a livery stable. Several hundred armed men sat behind the respective parties to the suit. One witness was shot at a number of times as he rode down the ravine at night. Although the famous William M. Stewart—rugged, masterful, full of vitality, already recognised as the coming king of the Comstock—was attorney for the Ophir, he could only force a disagreement of the jury.

Mining cases accumulated steadily until Judge Mott opened the First District Court in February, 1862.

By that time every valuable claim in the region was a "fighting claim"—that is, it was deeply and violently in litigation. Suits to dispossess claimants, suits to prove trespass, perjury, or fraud, single-ledge suits and multiple-ledge suits—these were as thick as blackberries. Wrote a correspondent of the San Francisco Bulletin: "We shall never outgrow this perpetual litigation until the courts rule that all indefinite or floating claims are worthless. If you find anything worth having, some one will levy blackmail."

Fights between rival claimants were frequent and bloody. Sometimes such fights took place "at the front"—that is, at the end of a drift. If there was reason to believe that a rival company was working on disputed ground, the superintendent of the first company took steps to drive them away either by smoking them out with sulphur or other substances, or by running a drift into the place and sending a body of miners with picks and shovels to overpower the enemy. "Fighting men" were hired at ten dollars a day in some cases, armed with knives and pistols, and sent to disputed territory. In fact, while cases were being argued in the courts, miners were sometimes fighting underground. The men of the Keystone Company drove away the miners of the Peerless, took possession of their shaft, and filled it with waste rock. The Grass Valley miners were assaulted through a drift by men of the Bajazette and Golden Era and driven to the surface. The Uncle Sam boys drove out the Centreville men in a similar manner. Yellow Jacket sappers cut into the Gentry shaft and smoked out their rivals. The Gentrys countermined and blew "all sorts of stinking smudges" into Yellow Jacket until the people of Virginia protested against the unendurable odours that filled every house in the city.

One of the most famous suits of the period was brought by the heirs and old-time backers of the Grosh brothers, who, it will be remembered, had been prospecting for silver and had organized several companies before the Gold Hill discovery. The shareholders in these forgotten enterprises now formed the "Grosh Gold and Silver Mining Company" and claimed 3,750 feet in the best part of the Comstock. Capitalized at $5,000,000, and afterward at $10,000,000, they soon sold enough stock to make a long and brilliant fight. The Nevada newspapers, like Silas Wegg, "dropped into rhyme" such as the following:

> The Ophir on the Comstock
> Was rich as bread and honey;
> The Gould and Curry, farther south,
> Was raking out the money;
> The Savage and the others
> Had machinery all complete,
> When in came the Groshes
> And nipped all our feet.

After long and costly litigation the heirs of the Grosh brothers failed to secure any foothold, and so dropped into oblivion.

Another most difficult, protracted, and expensive mining suit was between the famous Billy Chollar and the Potosi (pronounced by old Comstock *Potosée*). The Chollar Company, after a long series of minor difficulties with the adjoining claim (Potosi), claimed that theirs was the original ledge, and brought suit to "recover possession of a surface claim four hundred feet wide and fourteen hundred feet long," including, of course, a large part of the Comstock lode with the inevitable "dips, spurs, and angles." The companies fairly locked horns over this difficulty in 1861, and

On the Way to the Mine.

spent about a million and a half before they concluded to unite their shattered fortunes in the great Chollar-Potosi.

When this suit was brought, Judge Mott, who was on the bench of the First Territorial District, favoured the Chollar side in their geological theory that the Comstock was only an offshoot from their vein. Mott, to quote from Bancroft, "was therefore bribed or worried into resigning." The new incumbent, Judge North, finally decided in favour of the Potosi crowd. North was soon afterward forced to resign "to avoid the scandal of which he was the subject." Chief-Justice Turner was persuaded to follow his example, and finally the members of the bar asked the one remaining judge to resign, which he did. Both sides had received conflicting decisions in the course of this pitiable affair, but neither side, as it turned out, felt willing to have their methods of conducting litigation made public, and so, as I have said, the companies consolidated.

The great fight, however, unique in many respects among mining suits, was that instituted at a very early date by Burning Moscow against Ophir. The new company, under the title of "Burning Mosca Ledge Lucky Co.," claimed, in April, 1860, 2,400 feet "west of Virginia City, between the Central and Virginia ledges." Their ledge was said to be distinct from that of the Ophir, and to be "twenty-three feet wide in good ore." The stock was "boomed" in San Francisco, and soon the company had the sinews of war and came to the front in support of the favourite many-ledge theory as against the belief that ledges a mile away sprang from the roots of the Comstock and would eventually fall into the hands of the "only original Jacobs," the first line of locators.

Burning Moscow made an assault with terrible effect. All the wheels of the courts were set in motion. Ophir began buying out interests in other claims on the rival lode. The Garrison Company also brought suit against Ophir; the Whitbeck Company did the same, and the McCall Company followed, until Ophir purchased all their claims, which were on three so-called ledges lying within fifteen hundred feet of each other. Old Virginia made his last public appearance in connection with these Ophir purchases. Some of the claims they secured depended upon the original notice of location. Finney would not or could not find it until the superintendent of Ophir persuaded him into a tunnel and locked an iron gate upon him. In the morning he was sober and willing to produce the notice. He went to the disputed ledge, pried off a weather-beaten slab, and found a yellow paper, the original location notice that he had put there in 1858.

Burning Moscow, whose location was disputed in a similar manner by claims on sub-ledges, consolidated about this time with its several tormentors, increased its capital stock from half a million to three million dollars, and returned with multiplied energy to the assault upon Ophir. California and Nevada courts were shaken by the tumult of the struggle. The first onslaught of the Moscow supporters had lasted for two years, and the second lasted quite as long. The pioneer Comstockers were again and again questioned and cross-questioned, until the little that they knew was inextricably confused with the host of mining romances of the period. Some of them fairly lived on witness fees. The district record book was made to uphold each theory by turn. Meanwhile the real question in dispute could not be determined except by actual exploration.

Gradually this view of the case began to prevail. The community felt that the development of the district was fatally handicapped by such gigantic litigation. Suddenly Burning Moscow discovered that whatever might be at the bottom of their ledge, the top was chiefly lead and base metal. It was no Comstock, but contained only a very low-grade ore that could not be milled at a profit after a few surface stringers were mined out. Burning-Moscow stock fell from four hundred dollars to five dollars a foot, and Ophir bought the disputed property. First and last, the direct expenses of the fight had been more than a million dollars.

The mining suits which have been briefly described were only a few out of a great multitude. In 1863 some thirty cases, involving property valued at fifty million dollars, were in the district courts. "We had to fight fire with fire in those days," said an old Californian. Men who saw their whole fortunes at stake were not always scrupulous about ways and means, and their active agents were less often so. The atmosphere in which these interminable litigations were carried on became heavier and blacker every year. Public confidence in witnesses, juries, attorneys, and judges was sorely shaken. The Attorney-General of Nevada in one of his State reports, referring to the period under consideration, said: "Chicanery won more suits than eloquence and learning, and corruption more than solid merit." Nine tenths of the voting population of Storey County once signed a petition asking all the judges to resign.

Nevada's peculiar pre-eminence in the matter of litigation from 1860 to the end of 1865 is clearly exhibited by the Court records for that period. Ophir was in thirty-seven suits, in twenty-eight of which she was plaintiff. Yellow Jacket came next, with thirty-two suits, being plaintiff in twenty-four. Savage was nearly as litigious, having had twenty-nine suits and acting as plaintiff in twenty-two. Gould and Curry comes next, with twenty-seven suits, twenty of which were "actions brought." Overman had twenty-three suits. Eight more of the leading Comstock mines of the period under consideration (not including Consolidated Virginia, California, or the later combinations) had from nine to seventeen suits apiece. The total for twelve mines is two hundred and forty-five lawsuits, in seventy-seven of which the companies named were defendants and in one hundred and sixty-eight of which they were plaintiffs. In other words, more than two thirds of the suits were to dispossess the claimants of ground the plaintiffs considered as belonging to the Comstock lode under the single-ledge theory. The direct cost of all this litigation was ten million dollars—one fifth of the entire product of the Comstock during that period. What an illustration of the wasteful yet magnificent energy of the early Comstockers is the fact that this heart-breaking litigation began almost as soon as the discovery of silver was made, and rose to its greatest developments at the same time with the gigantic mechanical achievements and the vast underground works of the epoch! Five of those Nevada years were the equivalent of half a century of every-day life and of ordinary enterprises.

Great were the legal intellects that were at the disposal of the mining hosts fighting so steadily for control of what began to be called on the Pacific coast the "Treasure-house of the World." Some of the famous cases were tried in San Francisco, where the leading companies soon had their places of business; but Virginia City and (after the admission of Nevada in 1864) Carson, the State capital, were the principal battle grounds. The leading Comstock lawyers became famous throughout the United States. Young attorneys trained on the Comstock followed the prospector, the miner, the mill owner, and the freighter to camp after camp in the desert and the high Rockies till the principles of American mining law were expounded in Dead-Sea hollows below the ocean level, and in clusters of pioneer cabins above the clouds, ten thousand feet higher than the ocean floor, in the Alps of Colorado. William M. Stewart, the "old invincible," tireless in devotion, incapable of fatigue, master of mining-camp juries, received from Belcher $165,000 and from Yellow Jacket $30,000 as single fees. His professional income during the years of litigation was $200,000 a year. General Thomas H. Williams made four million dollars from mining property deeded to him as fees for his legal services.

CHAPTER XIV.

STOCK AND THE STOCK SPECULATORS.

In these days nine men out of ten know something about mining stocks and methods of dealing in them. At the time of the discovery of the Comstock there was no such thing on the Pacific coast as a stock and exchange board where shares in mines or companies could be listed and transferred. But the people of the entire Pacific coast were highly prosperous and ready for speculative investment. There were few manufactures, so that real estate and mines offered almost the only opportunities. The invention of methods by which the dollars of the servant girl and the farm labourer could be used to speculate with suited all classes alike. Assessments furnished the impetus that carried the Comstock mines safely over periods of depression.

Men were trading and selling not shares, but feet and inches, on the various ledges of the Comstock group all through the eventful summer of 1859. The first trouble was that no one had any cash, excepting a few newly arrived Californians. The second trouble was that nothing was developed sufficiently to show other than a speculative value, even on the main Comstock lode. Buying such property seemed to cautious men the wildest of gambles, even at absurdly low prices. Prospectors and speculators were staking out the country for miles around. There were times when, if quartz ledges could be supposed to take a personal interest in their fortunes, the Comstock would have been seen to stand abashed, flushing with indignation at the way in which its sworn lovers were flirting with base-metal outcroppings in the sage brush and deserts.

One will fail to appreciate the completeness with which the Pacific coast became in a day captive to silver unless he accepts the great rush to Washoe as merely the outward and visible symbol of things spiritual and intellectual. Men, women, and children yielded gladly to the spell—the story of another Peru, and the eager silver hunters were met on the summits of the Sierras by ragged, hungry, but desperately happy prospectors who told them that Washoe was richer than their dreams had pictured it, and who offered them mining feet in claims here, there, and everywhere for a few dollars.

"The truth is," they whispered to the incoming Californians—"the truth is that I am dead broke, but I have a fortune sufficient for any man in even the poorest of these claims which I have taken up or traded for. Five feet is enough to make a man rich, and if you can not take more, take five feet, it makes no difference where, at ten dollars a foot." Then they showed specimens so rich, black, and heavy that the Californians held their breath with envy, and, whether they bought or not, hastened on with redoubled energies. There was something wonderfully childlike and confiding about the bargains and transfers often made after precisely this manner in the Sierra passes between entire strangers.

In a few months the professional speculator, "the man who worked claims with his jaw instead of his pick" (to quote a common Washoe sentiment), was to be seen everywhere. Such men "huddled about corners of Virginia City consulting in low tones about various claims"; they straggled in from the Flowery diggings or other supposedly rich places with specimens in their hands, "offering bargains," as Ross Browne writes, "in the Rogers, the Lady Bryant, the Mammoth, the Woolly Horse, and Heaven knows how many other valuable leads, at prices varying from ten to seventy-five dollars a foot." The old, old games, as ancient as human capacity for swindling and being swindled, were everywhere in full operation, though no one as yet called the process "dealing in stocks." They were "bucking and bearing" (the term "bull" was not then known on the Comstock). They were "trading claims." They were "stuffing each other" after every conceivable manner and diligently blowing "Washoe bubbles." Mad speculation was everywhere, but no money was to be seen except in gambling rooms and saloons. Silver was everywhere underground, if reports could be credited; lawsuits, deeds, mortgages, and agreements to transfer everything on top of the earth or within it were as thick as autumn leaves and hardly as durable. Everybody was a billionaire in silver-claim inches, feet, yards, and rods, "including dips, spurs, and angles," from the top of Mount Davidson to the bottom of—Devil's Gate.

Ross Browne, whose genius caught many a glimpse in the rapidly turning kaleidoscope of the Comstock, remains our best guide through the "horrible confusion of tongues," the crowds of roaring, raving drunkards, "swilling fiery liquids from morning to night"; the "flaring and flaunting gambling saloons"; the "torrents of imprecations"; the feverish, unhallowed thirst for gain; the crowds of crazy-looking wretches running hither and thither, hurrying to assay offices, pulling out papers, exchanging mysterious signals—

these Washoe millionaires with their outcroppings and indications from the "Wake-Up Jake," "Root Hog or Die," "Wild Cat," "Dry-Up," 'Grizzly-Hill," "Same-Horse," "Let-Her-Rip," "You-Bet," "Gouge-Eye," and other famous ledges and companies. All night long, as Browne elsewhere reports, these fiendish noises contended, and his ears were overwhelmed with unintelligible jargonings and the difficult slang of the new mining camp. He tried one night to sleep at "Zip's," where twenty bunks were in the room, and found that every inmate except himself was bent on passing the entire night trading and transferring claims in the midst of shouting and universal pandemonium. He and the late Henry De Groot fled for refuge to a hole in the hillside and wrote letters to the New York Times and the San Francisco Bulletin describing in most realistic language the strange scenes about them.

What most surprised and often shocked the visitor was the fact that all this turmoil, this restless concourse of amateur stockbrokers and new-fledged speculators whose ranks increased daily, this howling and perennial insanity, occurred in a frontier camp in the midst of noble mountains where only a short time before the profound peace of an untroubled wilderness had reigned supreme. One writer suggested that if the New York Stock Exchange should hold its meetings on the top of Mount Rigi the scene would be paralleled, but in many respects it was a situation that was entirely new to the history of speculation in America, and the strangely mingled Comstock crowd of 1860 was certainly more wildly picturesque on the windy flank of Mount Davidson than even the most turbulent of well-dressed New York brokers and speculators. As they swayed through alleys between flapping canvas tents they seemed the chattering, half-dazed, wildeyed survivors of all nations and races thrown shattered and homeless into the desert after some vast world catastrophe that had erased from existence everything except the wealth passion and the ledges of Washoe.

But prices of mining claims could not rise forever. With drastic sarcasm an "old resident of Washoe," who is supposed to have been the late J. W. Simonton, one of the owners of the San Francisco Bulletin, described the situation in May, 1860: "We are informed that there is a panic in San Francisco in relation to our mining stocks; that nothing will sell; that even Ophir, Washoe, Chollar, and Corsair are drugs in the market; that banks won't discount Washoe speculators' paper; that Lady Bryan sells for fifteen dollars and Rogers for forty dollars; that the bottom has fallen out. Two months ago," he continues, "these wise men of Gotham went to sea in a bowl and got badly wet. Two months ago everything would sell. People bought blindly in the Bob Ridley, Last Chance, and Bob-Tail Nag. Where they were located, what was the character of the rock, who were the locators, and what the title, were not matters of inquiry. Fools at your end of the telegraph were deceived by knaves at our end; we sent to you mysterious hints of new discoveries that never existed, strikes in mines never located, accounts of sales that never took place. Your prudent men who would not buy a foot of land in San Francisco or make a loan without careful search of title have risked thousands without a thought. Your greedy folly was taken advantage of by our avarice; you became the victims of your own sublime stupidity and dishonesty."

A conservative estimate made in 1860 placed the number of claims located, interests in which were in most cases on the market, as five thousand within a radius of thirty miles from Virginia City! Only three hundred of these claims were ever opened at all, and only twenty were considered by careful outsiders as "thoroughly well established mines." Time was to show that only eight or nine of the twenty which were considered absolutely certain investments were to pay dividends. The majority of these five thousand claims lay forever idle. One would not have known that they were called mines except for an occasional claim stake or a fluttering, badly spelled notice on "indications" which were seldom attractive to competent mineralogists. Iron pyrites and all sorts of worthless metals were as good as gold and silver to the enterprising adventurers. Gopher, squirrel, and coyote holes furnished indications on the strength of which claims were laid out. Ignorant and plausible speculators with a smattering of geology added to the confusion. Before long men were claiming to have ledges of iridium, platinum, plumbago, and various other valuable substances. One Washoe prospector being informed by a San Francisco man that he wanted an ambergris mine, replied that he had one already staked out and for sale. A group of men under direction of the "spirits" tunnelled for weeks into the granite of Mount Davidson in order to tap an alleged lake of coal oil.

Besides the five thousand actual claims there were many more prospect holes a few feet across—mere ragged pits or cuts in the yellow sand, clay, or rocks of the barren hillsides. Prospect holes, too, were about all that one could see on the vast majority of claims already held. They dotted the whole region in wind-blown heaps and hollows between dismal clumps of sage brush and the dull yellow of coarse sunflowers that occasionally bloomed in the freshly broken slopes.

This was the sort of thing, for the most part, that the staid old merchants of San Francisco and Sacramento had been fighting over in the spring of 1860! Virginia City and Gold Hill record books show that nearly sixteen thousand claims were recorded in those districts in the twenty years after 1859.

Donald Davidson, the first ore buyer on the Comstock, was soon introduced to one of the favourite jokes of the fun-loving miners who were quite well aware of the innate absurdity of claim-staking the whole of Nevada. After he had agreed to buy two hundred tons of selected Ophir ore at two hundred dollars a ton and to ship it at his own expense per Carson mule fast-freight train, the miners celebrated the important event by a trip to the top of "Sun Peak," which then and there was rebaptized Mount Davidson. They showed the honest old Scotchman dozens of quartz veins on the way up, and told him they were fairly running over with richness. After their return in the evening they proposed to locate claims on these new ledges for the banker and all his personal friends. The recorder was called in, and Davidson gladly put up fifty cents apiece for some twenty-five claims in the granite masses of the grand old mountain. Then the jovial recorder suddenly invited the crowd to aid him in the liquid transmutation of some of the Davidsonian gold.

Throughout the entire period of stock speculation, in all its ebbs and flows here and elsewhere as well, every student is surprised at the fewness of the paying mines and at the number that hang helplessly upon reputations made for the various districts by one or two magnificent properties in each. The bullion reports from these stir the pulses of investors and speculators alike, and they often pour successive assessments into worthless and barren places for years. The sum total of the dead-work of the Comstock period is almost incalculable. Men of large capital and the millions with their small savings united to explore the ledges of Nevada at an enormous expense, and often upon entirely unprofitable mines, or rather not—mines. To individualize these cases of profligate outlay, writes one of the old Virginia City editors, "would be simply to catalogue the leading enterprises carried on during this epoch of prodigality and mistake." Ten million dollars was spent in sinking shafts and running drifts about Virginia City without finding a single large and lucrative mine.

There are the forgotten Palmyra and Indian Spring districts in Pine Nut Range where two pretty little towns once stood, but now only the graveyards remain. There is that Nevadan Golgotha of speculators, Esmeralda, where millions of dollars were wasted. Beyond, toward the Humboldt, in range after range of bleak, desolate mountains, or in the tawny desert, are the ruins of abortive mining enterprises. In every direction—east, west, north, south—credulous stockholders staked and lost vast sums of money before the close of the '60's. Over in the lava of Pine Woods district in 1863 some Virginia City men sold a group of mythical mines and received a very large payment down. The New York buyers spent another fortune and departed, leaving the holes in the desert. Everywhere, for hundred of miles, on steep ranges, in sandy wastes, money was spent without stint upon misguided and foolish mining enterprises, supported almost always by associations and companies. Said Dr. De Groot, who had visited nearly every camp on the Pacific coast, "That's the dilapidated mill of the Let-Her-Rip"—and, true to its name, it burst the financial integuments of every stockholder. "I haven't time," he continues, "to relate the story of the 'Wild Emigrant,' the 'Shamrock,' the 'Silver Lyre,' the 'Pungle-Down,'" and he makes passing mention of many other wildcats and abandoned districts of the '60's, such as the "Lunar Rainbow," the "Bloody Thunder," and the countless host of unproductive mines in Cortez, Silver Bend, Reveille, Pahranagat, and classic White Pine.

Later came others, dragging luckless speculators down the paths of ruin—barren Panamint, on the edge of the terrible Death Valley; Marietta, in the Excelsior Mountains, where the whole deserted town still lies bleaching in the sun; emptied, ghostly camps by the score, dead, unburied, weighted down by human curses. Each one of them was hailed in its day as a new and greater Comstock; each one in its fall destroyed homes and made suicides. The smallest and most ephemeral of them all has had a history which, had it occurred in some staid farming community, would have made the place memorable as the scene of an awful disaster. But, spread widely over time and space, the ruin that follows the failure of a promising camp is difficult to trace or measure, especially in these lesser instances. The Amazonian current of Comstock speculation sweeps far out into the ocean of human life, strewn with its multitudinous social wrecks, and it still remains the preeminent type of its class.

As time passed, mining stocks became more and more the typical and most popular form of speculation in California and Nevada; often the whole community seemed to be dealing in them. There have been periods when leading brands of goods have been named after favourite mines, when streets, squares, parks, and children were christened in the same way, and when the slang of the mining market was used by every class of society and in every learned profession. The barkeeper mixed "bonanza" drinks and talked of his stocks. Boys and girls, servants, labourers, mechanics, and clerks were calculating upon gaining fortunes with their little savings. All classes alike helped to sustain the stupendous game of silver mining in Nevada. "The market," said the Mining Review in 1870, "extends everywhere; the buyers and sellers of stock include the millionaire and the mendicant, the modest matron and the brazen courtesan, the prudent man of business and the gambler, the maidservant and her mistress, the banker and his customer."

The whole history of the Comstock lode is revealed in the assessments, dividends, and fluctuations of the stocks of the separate mines. There every consolidation of interests, every lawsuit, every period of extravagance and of economy is written so that he who runs may read. Before the end of 1861 eighty-six companies were organized and working the Comstock and adjacent mines; their aggregate capital was $61,500,000. Only a few were paying at the time, but every one fondly believed that they would all wheel into line before long. The prodigality that followed in the days of the earlier bonanzas was partly the free-handed liberality of Californians trained in the schools of the placer camps, and partly the unchecked extravagance of gambling stockholders. Gould and Curry, a marvellously rich mine, took out nearly nine million dollars and declared $2,908,800 in dividends during 1863 and 1864. The actual investments made by its owners, who bought it for a few thousand dollars, had been less than $200,000; but the expenses of the company during that two years was close upon six million dollars, or more than twice the dividends. It has been reckoned that the dividends from the nearly 110,000 tons of ore milled during those two years might just as well have been four and a half millions, as less than three millions, if the company had worked all its ores in its own mills and with less haste. But, as the president of Gould and Curry said, "every stockholder wanted it snaked out at once, at any cost, and so we wasted a third of our profits."

The first great depression in mining stocks (after they had any commercial value at all) began as soon as the rich ore chutes near the surface had been worked out and the search for new deposits had begun, with consequent assessments. Shares rained on the market from all directions, and hundreds of prominent men were ruined. Gould and Curry, which in 1863 sold at $6,300 a square foot, fell to $900 in 1864. Ophir dropped from $1,580 to $300. Savage went down from $2,600 to $750. Every mine on the Comstock suffered in a similar proportion, and the "wildcats" of the outside districts were "out of sight, underground."

While the leading mines were drifting for more silver along the east wall, some directors, who desired to keep the news of any "find" from reaching the ears of the public, conceived the idea of confining miners to the mine for days at a time. They received the best of care and often had increased wages. In 1868 Hale & Norcross tried the experiment. When the men were released the superintendent reported a strike, and the stock rose from $1,300 to $2,200, though the mine did not justify the increase. Speculators soon became so suspicious of the plan that the stocks of a mine were quite as apt to fall as to rise when the miners were imprisoned.

According to the present plan, when a mine reaches rich pay-ore the superintendent, who has long watched the process of the work, generally knows it first. The doors of the building over the mine are closed and admittance is refused to all outsiders, even to reporters. Only a few of the men in the mine have had a chance to find out anything, because, if the superintendent knows his business, a "secret shift" has done all the work for weeks at the advanced point in the drifts where ore is expected. The oldest and most reliable miners are chosen for the shift. They are seldom ordered in set terms to hold their tongues, but if anything regarding the mine gets abroad every man on the shift is discharged. The truth about the inside of a mine can seldom be obtained from a miner that works there. Loyalty is ingrained in the very nature of the man. Though nearly every miner buys stock, and it would be strange if he did not, he is up to all the points of the game, and if he is on a "secret shift" can manage to conceal his information from the shrewdest of "curbstones brokers" or mining spies.

Virginia City in times of stock excitement was honeycombed with newspaper reporters, agents of dealers, and outsiders whose business it was to obtain by fair means or foul an exact knowledge of the condition, present and prospective, of the Comstock mines. Every one who was connected with the suspected mine or mines was shadowed as closely as if he was a counterfeiter. A Comstock tradition is to the effect that on one occasion when the air was full of hints of a strike, but nothing could be gleaned in any direction, a shrewd mining detective hid in the works, saw the superintendent come out and take off his dirty mining clothes. He slipped in, and finally managed to scrape a few ounces of dust and clay from boots and overalls. This waste, when assayed, showed that some drift the superintendent had been examining was in a new and very rich formation. He wired his backers to "buy hard," and they made vast profits.

During every great stock excitement the mining towns themselves are loud-buzzing beehives, sending out the latest news, buying and selling stocks with feverish haste. In Virginia City as well as in San Francisco at such seasons fortunes have been made and lost in an hour. It is curious to see how people behave when stocks start upward again. Those who lost in the previous spurts remark calmly to their friends: "Now this time I shall sell at a fair profit; let the other fellow make somthing too." Pretty soon stocks jump a little higher. "Now when I can double my money, off I go for a vacation." Then stocks fall off a few points, "get soft," then harden, then "run again softer." "Some one has been telegraphing lies about the mine to San Francisco," says our friend. But matters grow worse, the holders are called upon to make good their bargains, and the boom ends in a crash, with our luckless friend still holding his shares.

In Dan De Quille's Big Bonanza is a letter said to have been received in Virginia City from a Frenchman who had become acquainted with the meaning of the term "mud," and I quote a portion: "By zee advice of our goot friend," as the inquirer stated, "I have procured some time past on what you call 'on zee time' many shares of zee Bobtaile. He, mine friend who repose on zee inside, express himself of zee mine wis moche enthusiasme. Zee mine be one merveille de la nature; zee works un chef-d'œuvre de l'art. But now, pretty soon—le diable! Zee brokaire man use zee expression to me as follows: 'more mud.' So many, five, seex time have he, zee brokaire, desire of me some leetle more mud that now I mus make one gran sacrifice pecuniare. It be now become scandaleuse. Pretty soon you have one crash financial—I gone bust—me. I be ver moche perplex wis zee stroke of prices. He viggle up, he viggle down, all zee time. Will you have ze complaisance to inform me how soon he will viggle high up, an remain to pass some time up dare?"

In order to illustrate more forcibly the fluctuations of the stock market during the ten years following 1867, I have gathered the following notes upon two typical mines from the commercial columns of the San Francisco newspapers:

Alpha, an assessment mine, sold for $1,570 in February, 1868, fell to $33 in September, rose to $62 in February, 1869, sank to $11 in October, rose to $21 in March, 1870, sank to $3 in September, rose to $20 in September, 1871, and to $240 in April, 1872, then sank to $15 in July, 1873, and rose again to $100 in September; in February, 1874, sank to $9, roce to $45 in June, 1875, and sank to $3 the same month; in May, 1876, it rose to $67, and sank in December to $18; in 1877 it fluctuated between $5 and $23. Alpha, with 30,000 shares, levied $330,000 in assessments up to 1880, and has never declared a dividend.

Belcher, unlike Alpha, was a great dividend producer, one of the three leading mines of the period, having paid in thirty-eight dividends up to 1880 nearly sixteen million dollars, with assessments of less than two millions. It had 104,000 shares after 1869 (1,100 to the foot). The price of the stock sank from $430 in April, 1868, to $110 in July. Then, the capital stock being largely increased, the price per share became proportionately less. In 1869 prices ranged from $12 to $35; in 1870 sank from $35 to $1; rose to $6 in January, 1871, and to $450 in December; sank to $6 in January, 1872, rose again to $1,525 in April, fluctuating all that summer, down to $1.50, up to $95, down to $9, and so on. In 1873 there were again great variations; the stock sold down to 25 cents a share and up to $113 with many surprising eddies, going down to $1.50 in August, and then rallying until in January, 1874, it was at $120, breaking by November to $42.

It would be easy to go on with these comparisons from which an instructive chart might be constructed to exhibit the rise and fall of stock values. For the purposes of speculation, the mines that did not pay any dividends were often exactly as good as those that did pay. This was fortunate for the stock owners and for the miners, mill men, superintendents, and all who made a living from the business, either directly or indirectly. Out of one hundred and three Washoe mining companies reported and regularly listed, only fourteen paid any dividends at all, and only six of these paid more dividends than assessments. The six were Consolidated Virginia, California, Belcher, Crown Point, Gould and Curry, and Kentuck.

Some of the assessments paid upon mines that never yielded a profit and paid unflinchingly for years by successive legions of stockholders were unparalleled in mining history. Alta put in $1,317,600; Baltimore Consolidated, $1,015,000; Bullion, $3,352,000; Caledonia, $1,935,000; Consolidated Imperial, $1,125,000; Justice, $3,230,000; Mexican, $1,243,000; New York, $900,000; Overman, $3,162,800; Silver Hill, $1,620,000; Utah, $1,030,000. Here were ten mines that sank in assessment work nearly seventeen million dollars, while many other mines that paid some dividends lost very large sums: in the case of Yellow Jacket, $2,454,000; and of Sierra Nevada, $3,747,500. Hundreds of thousands of investors in every part of the civilized world have reason to remember one or another of this list of non-producers.

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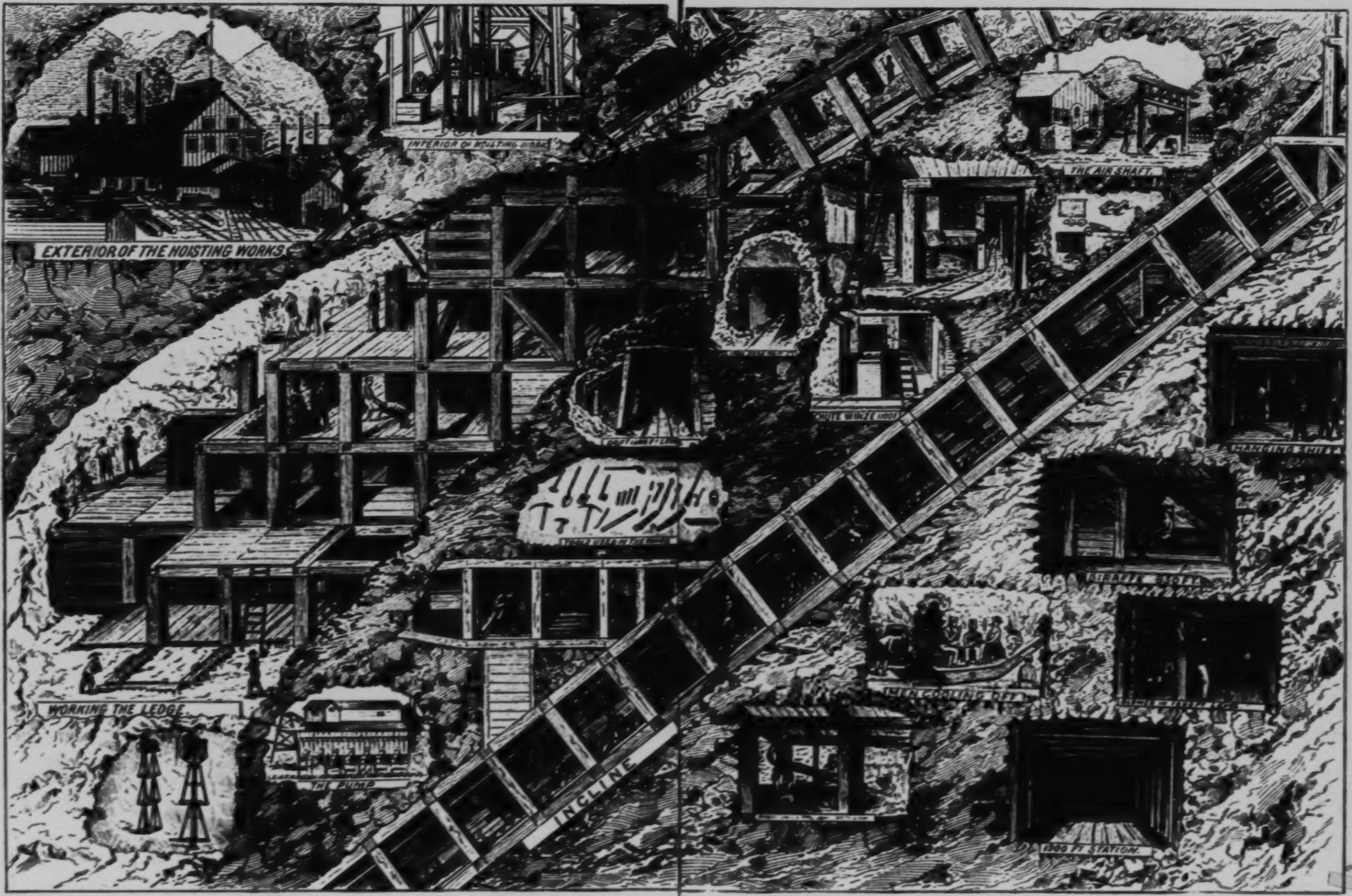
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Sectional Views of the Belcher Mine.

It has been estimated by many writers that if the highest price be taken which each mine at one time or another has brought (as figured out from the number of shares and the stock-board maximum) the Comstock has cost $700,000,000, but there never was a single time when the entire lode, even in the stock market, was being sold at this valuation. The only possible way of estimating the profits of a mining enterprise is to take the difference between the total yield and the total expense. The currents, undertows, eddies, whirlpools, and enormous maelstroms of the mining-stock markets are of oceanic vastness, crowded with unforeseen perils, and throbbing with immeasurable energies, expressed all too feebly in billion-dollar estimates, but the actual available capital of the stock market is many times less than its fictitious valuation. If it were not so there could never be any stock market at all.

In the year 1877 the total sales of mining shares on the three San Francisco stock boards amounted to very nearly $120,000,000. This was two years later than the height of the greatest speculative period in the history of the lode, and may serve to illustrate what used to be called a prosperous year. Without some such method of speculation no mine that did not pay its expenses from the start could ever have been developed except by wealthy owners; no ten or a hundred men would have taken the risks and invested the capital required to push work on Comstock mines as rapidly as it was pushed for fifteen or eighteen years after their location. The division of the various mining interests into hundreds of thousands of small shares gave every one an opportunity to invest in the game of chance. As long as many thousands chose to invest, the high-pressure system continued.

Reports from the San Francisco boards were bulletined in Virginia City as soon as received in times when stocks were rushing upward like auroras or falling like rocket sticks. Everybody ran to see them—flour-dusted bakers, blacksmiths with sledge hammers, white-aproned butchers, bare-headed clerks, miners on the way to the shafts, a teamster "thrusting his black-snake under the housing of his saddle mule"—all hurrying to the bulletin boards to see their fates. The streets became blocked so that the police had to clear a passage, and the town quivered with joy or sorrow with each change in the figures. Sometimes a long-drawn sigh, mysterious, universal, sought expression as values slipped away down to the depths.

As for the successful mining operator, time was when he was the most aggressive and scintillant figure in the social and business worlds of the Pacific coast. Such men as "Jim" Keene, "Bill" Lent, "Johnny" Skae, General Gashwiler, and others still remembered on Pine Street, were men who in their time knew every curve and twist of the Comstock market. Hundreds of others linked their names with famous mines and with thrilling chapters of speculation. Group after group rose to power, ruled after their kind, and fell from authority. Some few there are who have survived many a successive dynasty and are still Rajahs of the White Elephant. In flush times the leaders of stock operations were known by their purple and fine linen, their splendid equipages and their lavish expenditures, generally in San Francisco, but sometimes in a trail of corruscating glory across the continent. But every now and then a man was caught on the wrong side of the market, which fluctuated at times much more violently than anything on Wall Street. Down he went, down and under, and new men took his place. Perhaps in the course of time, soured and blunted by misfortune, the unfortunate operator joined the ranks of the please-lend-me-a-dollar denizens of Pauper Alley, a narrow street in San Francisco between Pine and California, where the hopeless wrecks of forgotten storms of speculation are drifting to and fro.

There, in Pauper Alley, one can walk, any time in business hours, and see creatures that once were millionaires and leading operators. Now they live by free lunches in the beer cellars and on stray dimes tossed to them "for luck." Women, too, form a part of the wretched crowd that haunt the ends of the Alley where it joins its more prosperous neighbour streets and beg every speculator to give them a "pointer" or to carry a share of stock for them. These are the "dead mud-hens," as the men are the "dead ducks," of the Comstock share gamblers. Horrible things one sees and hears of here. Old friends you thought were prosperous but had not heard of for years shove themselves out of the huddle and beg for the price of a glass of whisky. There stands a once-prosperous printer, in rags—he took flyers on the street too many times. Yonder beggar lost $400,000 in a single summer, all good gold. The ghost of many a murdered happiness walks unseen among these half-insane paupers as they chatter like apes of lost fortunes and of the prospects of their favourite stocks. Really it is a frightful thing to walk there and look at the seamy side of the silken garment of fortune.

CHAPTER XV.

BORRASCA AND BONANZA.

A STUDENT of mining interests must rise to a broader view than that suggested by the artificial stimulus of the stock market. It is something, of course, to know what has been wasted in assessments, how stocks have fluctuated, and what fortunes have been gained or lost therein. But it is in every respect more important to observe the development of the mines from the standpoint of legitimate business enterprises, entirely independent, in the last analysis, of outside gambling elements. Individuals have been impoverished, but has the Pacific coast and the world at large gained or lost in a financial sense by the millions spent upon the Comstock?

The answer is given in official records. If we take the summer of 1859 as the starting point and sum up the assessments made by the several Comstock companies for twenty-one years, we shall arrive at the grand total of $62,000,000, according to Government reports. Dividends paid during the same period aggregated $116,000,000, and to this the statisticians add $2,000,000 for unreported individual profits on mines before they were incorporated. Striking a cash balance, the Comstock ledger thus exhibits an actual profit of $56,000,000. In round numbers, the bullion yield of the group of mines for the same period was valued at $306,000,000. Subtracting the profits, we have as the cost of the purchasing, maintaining, defending, and developing the great lode for twenty-one years, $250,000,000. Three fourths of this sum, it must not be forgotten, came from the mines themselves; the other fourth was the result of direct assessments upon the stockholders.

Turning to consider the other elements of cost, we find that the prospectors and original locators upon the lode received less than one hundred thousand dollars for their claims; also that subsequent owners paid less than a million dollars out of their own pockets as "working capital" before the levying of assessments began. Practically, therefore, and viewed as a whole, the Comstock lode in twenty-one years created from its yield, and at the cost of only about sixty-three million dollars (adding the assessments as previously noted), all the values of towns, mills, mines, machinery, and other co-ordinate actualities too numerous to catalogue.

The one distinguishing feature of all mining is the fact that the finest engineering skill, the special training of geologists and mineralogists, the hereditary instincts of the descendants of generations of miners, are, and always will be, incapable of mapping out mining territory except by tedious and expensive explorations. There are in all mines periods of high production separated by periods of low production. There must be "*bonanza*" and "*borrasca.*"

Both these words are borrowed from the Mexican miners. They have musical and expressive phrases for cuts, adits, hanging wall, foot wall, tunnels, shafts, and every part of a mine, as well as for every operation connected with mining. Two Mexican mining terms are now generally known to Americans. When a mine is not in pay ore, or the vein has "pinched out" or disappeared, it is "*en borra*," or "*emborrescada*," or "*borrasca*." As one hears it on the Pacific coast, it implies ill luck or hard times, coupled with stern resolution to keep pegging away.

I once heard a rancher greet a friend with, "How are things with you, Jim?"

"Still in borrasca, but it can't last forever," was the reply.

"How did it happen, Jim?"

"Well, I struck pay rock buying cattle in Modoc an' tradin' that-a-way. Then things sorter dribbled out till I dropped down to sheep herding up on the Chowchilla, an' you know that's borrasca."

"So it is, sure! Well, here's wishin', as the Greasers say, that you may hev as many days in bonanza as you hed in borrasca."

The antithesis is plain. Bonanza—a large body of pay ore—has come to mean especial prosperity. The allusion is to a cheerful proverb of the Mexican silver miners, which runs: "As many days as you spend in borrasca you will surely spend in bonanza." Mexicans have often been willing to take leases of non-paying mines based upon the condition that if they find a bonanza they shall be allowed to work it for as many days as they had laboured to find it. Such a lease was once given on the Comstock, and the Mexicans spent six months tunnelling through barren rock before they gave up in despair, much to the joy of the superintendent, who had begun to think they had really found a bonanza and were only trying to lengthen their time sufficiently to be able to "clean up everything in sight."

It is one of the striking features of the story of the Comstock that some companies have usually been in bonanza while others were in borrasca. Something on the great lode has been paying dividends even at times of greatest depression. The working theory of mines is to be exploring for new ore bodies while working out the ore in sight, so as to occupy both workmen and mill. But in practice this is often impossible, so much "dead work" has to be done to find and work the ore bodies and so much barren space is passed over. As long as active exploration is being kept up in a mine there is always a chance of a strike. Many stock speculators depend upon the simple rule of buying whatever has been a long time out of luck. This rule has made and lost fortunes on the Comstock.

There is something sudden, unexpected, and temporary involved in the term "bonanza." No one expects or plans for a bonanza of any sort; it means much more than merely pay rock. So it usually happens that when a company strikes a bonanza the stock has been "kicking about the street," to use the broker's phrase, which means that it was like so much waste paper. The chief owners of the mine and their friends try to gather in all the stock they can; pretty soon there is a whisper of a new bonanza on the Comstock, and up the prices go, far above their true value, then they tumble back again. The hope of a bonanza, or the rumour of its actual presence, has been at the bottom of every stock excitement. Safe, steady pay ore produces no such flurry on the street.

What is known on the Comstock as the "old succession of bonanzas" began comparatively near the surface. Ophir, Mexican, Savage, Gould and Curry, and Hale and Norcross, all found much ore along the first line of work. After the vein was discovered to dip toward the east the second line of shafts was constructed with larger and better works, and when the vein was again reached a large number of very rich deposits was found. The gross yield of the various mines during this entire period was as follows: Ophir, $20,000,000; Savage, $16,500,000; Hale and Norcross, $11,000,000; Chollar and Potosi, $16,000,000; Gould and Curry, $15,000,000; Yellow Jacket, $16,500,000; Crown Point, $22,000,000; Belcher, $26,000,000; Overman, $3,250,000; Imperial, $2,750,000; and Justice, Kentucky, Sierra Nevada, and many others, from a hundred thousand to more than a million dollars. By 1865 the total bullion yield of Storey County, most of it from the Comstock, was about nine and a half million dollars. During the first twelve years after 1859 the production of all the mines on the Comstock averaged a little over $12,000,000 annually, or a total of $145,000,000. The actual yearly yield, however, fluctuated greatly; it rose to seventeen or eighteen millions and sank as low as two millions. Work went on with undiminished zeal in every mine on the lode during all these twelve years, and those mines that were in borrasca kept going by means of their monthly assessments.

According to modern methods of managing rich mines, this enormous yield ought to have made some stir abroad, but it hardly seemed to cause much excitement. Conditions which prevailed on the Comstock were such that the larger part of every bonanza went into running and extraordinary expenses. I have described a few of the costly mechanical developments required, but all along the line magnificent enterprise and the most reckless waste went hand in hand, particularly in the four or five years after 1860. Money was spent lavishly; wages were very high, cost of living was enormous, and the miners had the best of everything. Behind all this, tens of millions of dollars went for experiments with mills and machinery. As for salaried officials, the number of relatives and friends that the owners of the famous mines managed to support by obtaining them sinecures will never be known. Clerks by the score were paid with Comstock silver until, as the writer of the time casually remarks, "it seemed as if half the young men in San Francisco were directly or indirectly supported by the Nevada mines."

How great was the total of this astonishing wastefulness may be gathered from a few statistics. The grand old Ophir, after taking out $15,000,000, had paid only $1,400,000 in dividends. Half a million, to be sure, was in the new Washoe Valley mill, and perhaps a million in machinery on the mine itself, but the rest went for salaries, labour, and "supplies." The last elastic word had to answer for many missing dividends in every mine of the epoch.

As far as Virginia City was concerned, an assessment mine was often nearly as good as a dividend mine. Every one in its employ received just as high wages, paid with as much promptness, as the wages at the other mines. Lumbermen, freighters, merchants, had almost as much support from a mine that was in borrasca as from one in bonanza, provided that the borrasca did not prove so continuous as to cause the stockholders to quit work. It was generally thought as cheap to keep on doing something as to let the mine go to ruin and the machinery become worthless. Whether the advance drifts were in barren feldspar, in pay ore, or in bonanza, the great mines went on summer and winter alike.

I have already illustrated the expensive processes by which the rich ore of the first line of bonanzas was wasted, in a previous chapter, by reference to the useless Gould and Curry mill. In those days the stockholders of the mines walked the streets of Virginia City "as if pacing the roof of an unfathomable treasure-house," says Mr. Eliot Lord, "and their heads were continually in the clouds. They saw a network of silver beneath their feet and the fine strands widening into solid wedges of ore." No metaphor can exaggerate the prevailing delirium. "Men were drunken with the wine of sudden success, and scattered their money broadcast." A superintendent of Overman filled his water tank with champagne for his guests at a wedding. Another Nevada mining man put door handles of solid silver throughout his entire house. The works, offices, residences, and stables of officials were constructed on a scale of expenditure that would have befitted an Oriental prince. Terraces, fountains, thoroughbred horses, libraries in morocco "bought by the foot" like silver ledges, the costliest of whatever can be worn, drank, or eaten—these were counted among the necessaries of existence.

When the free-handed Californians led in such lavishness, the few old-timers who were left soon caught the pace. One of these was Sandy Bowers, once a Gold Hill placer miner, whose claim was ten feet on the Comstock. A washerwoman who was in the camp owned ten feet adjoining. Bowers married her, and in a year or two, their ground proving to be in the heart of the surface bonanzas, they became extremely rich. Bowers began in 1861 a stone mansion which finally cost him $407,000. While the contractors were at work upon the house the wedded pair went to Europe, spending three years there with great comfort to themselves. Before they left, Bowers hired the International Hotel and gave a banquet to nearly the whole of Virginia City. Every luxury that San Francisco could furnish was ordered for the occasion. Bowers's speech was long quoted on the Comstock: "I've had powerful good luck in this country, an' now I've got money to throw at the birds. Ther arn't no chance for a gentleman to spend his coin in this country, an' so me an' Mrs. Bowers is goin' ter Yoorup to take in the sights." He proceeded to explain that there were few or no people worth seeing in America. He considered Horace Greeley worth looking at, "likewise Governor Nye and old Winnemucca." But what he had really set his heart upon was to see "the Queen of England and all the other great folks of them countries." Sandy Bowers continued to throw his money at the birds—chiefly birds of prey, as may easily be conjectured. He died in 1868, the mine ceased to pay, and Mrs. Bowers, reduced to poverty, became widely known as the "Seeress of Washoe," the most popular fortune-teller on the Comstock.

During the first few years of the Comstock the dominating individual was undoubtedly the well-known William A. Stewart, afterward United States Senator. He was a man of large plans, immense fertility of resource, and unblenching courage. Burly, frank-spoken, powerful mentally and physically, he was said by the Gold Hill News to "tower above his fellow-citizens like the Colossus of Rhodes" and to "contain as much brass in his composition as that famous statue ever had." If the flush times had continued, one can hardly see how the authority of "Bill Stewart of Nevada" could have been shaken. But the times when the control of a great mining district passes from one man or set of men to others are undoubtedly the times when bonanzas fail and stockholders begin to despair. Then occurs a general readjustment, and new men force themselves to the front as captains of industry.

Ophir, which had spent a million dollars or more in litigation over a piece of mining ground that it afterward bought for seventy thousand dollars; Gould and

Curry, whose bonanza was plainly at an end by 1864; Savage, and others of less importance—these began to retrench in every possible way. The trained business man began to be in demand; the virtues of adversity began to be developed. The wild and passionate mining-camp leaders, whose impulses were as strong and fierce as the waves of the ocean, were slowly giving way before a new epoch—that of the close organization of capitalists for motives of self-interest. Gone were the Comstocks and O'Rileys, gone was old Finney, the Rip Van Winkle of Washoe. Going, too, were the early Californians, the supplanters of the first Comstockers, the early mill-builders, the first lumberers in the Washoe foothills, the men of the first line of bonanzas. They had spent too royally; the mines were in borrasca, money was scarce, and every one was in debt.

A small, quiet, reserved man, a born financier—William Sharon—became in the spring of 1864 the manager of the branch of the Bank of California at Virginia City. It is said that he had devoted much of the preceding year to study of the Comstock; he had lost a moderate fortune in stocks, and was anxious to recover himself. For several months before his appointment he had been a private financial agent of Ralston's, and had saved large sums to the bank. Though almost unknown, a few men saw in him the coming master of Nevada.

Local banking houses were lending money to business men and mill owners for from three to five per cent a month; Sharon offered loans on the same security at two per cent, and made large advances on these terms. While the mines were turning out ore the mills could easily pay such interest and make money, but as soon as the ore product was checked and

Eureka Mine.

the music of the stamps ceased, the mill owners were in trouble. A mill in White Pine district that had cost $200,000 was once vainly offered, when in perfect condition, for $5,000. Sharon himself once sold a mill for $3,000 that had cost him $60,000, the original loan, and interest. Here in the shadow of dull times along the lode were the beginnings of what the public soon called "an infamous, fortified monopoly system." The bankers became the mill owners, and ultimately managed to control the mines also. Sharon's opportunity came through the few years of leanness in the producing mines.

Mill after mill fell into the hands of the Bank of California until seven large and well-equipped quartz mills with all their water rights, contracts, and privileges belonged to that institution. Sharon had investigated every mine on the lode, and believed that there was a future for the Comstock far brighter than the past. Ralston, though always a daring operator rather than a banker, felt doubtful of the future of the mines. If they should fail, the abandonment of the district was sure to follow, and not only the large sums he had advanced upon milling property, but the equally large amounts loaned to mining companies (not to individuals) would be entirely lost. The security was practically ore (as yet undiscovered); none of the mine owners were personally responsible under the laws of that period for company debts. Mills, machinery, all the towns of Nevada even, were not worth tuppence if the fissure, so barren at the levels being worked in 1865, continued barren much below that depth. An absolute collapse of the mines and all interests dependent upon them was looked upon as a not unlikely event. Large owners began to try to sell, with the usual result of breaking the stock market completely.

At this time Ralston visited the Comstock. It presented a melancholy picture of a mining camp in eclipse, and he became very uneasy at the situation. How much the Bank of California then had invested is not known, but it was said by Mr. Sharon, years later, that at one time before 1870 three million dollars of the five million dollars capital of the bank was loaned on the Comstock. The leading bank of the Pacific coast had virtually become a mine-supply company for a group of silver mines in Washoe! It already controlled some of the mines at the time the mills began to fall into its possession, and, upon Sharon's advice, the policy of conquest was pursued with redoubled energy. The bank in the hands of Ralston and his friends was liberal, enterprising, speculative, and at times enormously profitable, but it was managed in a spirit that was far removed from safe commercial methods. One may even say that the whole reckless audacity of the mining era of the Pacific coast found its apotheosis in the history of the Bank of California, and its typical men in Ralston and his group.

Sharon advised that a corporation should be organized by some of the leading men of the Bank of California to buy and manage the mills which had come into its possession, and that these men (who were already holders of much mining stock) should concentrate their energies upon such mines as were producing or likely to produce ore for milling. The possibilities of profit to this company in case of new ore bodies being found were very great, for they would be making contracts with themselves whenever they sent the ore to a custom mill. In June, 1867, therefore, the famous Mill and Mining Company was formed by W. C. Ralston, William Sharon, Alvinza Hayward, D. O. Mills, and others. They were soon called the " fortified monopolists," and nearly all the vested interests of the State of Nevada other than their own were soon arrayed against them.

There are but two systems of handling ores: each mine can own its own mill, or it can send its ores to a custom mill. In the one case the mine owners build and carry on the mills, managing them through salaried employees; in the other they contract with the lowest bidders who can and will guarantee fair returns. Both systems have drawbacks. On the Comstock the experiment made by some mines of building their own mills had been a sad one; the free, energetic mill owner became a more efficient ore-worker than the hired mill superintendent. But the Comstockers did not protect the permanent interests of the mill men to whom they owed so much. What Prof. Raymond has called the piratical policy of gutting the mines was carried on at such a shocking rate of speed that it first unduly stimulated the building of mills and afterward left the mines totally unable to sustain any of them.

Ralston's Mill and Mining Company in two years was the owner of seventeen mills, some obtained by foreclosure of mortgages, others by purchase. While outside mills could not make a living, those of the syndicate were kept running night and day, crushing nearly all the ore of the region. Naturally, the syndicate fought everything that threatened to reduce its profits or check the progress of its plans to become absolute master of the Comstock and its allied interests. It fought Sutro, because his tunnel might permit outside mills on the Carson River to work ore even cheaper; it fought the independent mines and mills; it entered politics and fought against certain laws and for other laws after the manner of similar syndicates the world over. It began to hedge about the free Comstock miner, and slowly but surely all men became aware that the substitution of the Sharon group for the Stewart group as the leading personal influence in Nevada was a complete revolution—the greatest that the sage-brush land had yet seen.

During this period of depression, when the Comstock lode fell measurably into the hands of this small group of Bank of California men, almost the first scheme of Sharon and his associates was the building of a railroad to connect the mines with more distant mills owned by the syndicate, and both with the main Central Pacific line. It was an old idea, like everything else, long rolling about—a mere tumble-weed of the desert. Legislatures, both Territorial and State, had granted charter after charter to different parties who agreed to build railroads after a manner which looked excellently well on paper. But these premature and miscellaneous projects of universal railroad building in that wild mountain land were without definite purpose, and soon sank into a state of innocuous desuetude.

Then Sharon, the man of affairs, sent for the best mining surveyor on the Comstock. This was Superintendent James, of the Sierra Nevada Company. The conversation that follows is from his own statement. Sharply, and without a word of explanation, Sharon said:

" James, can you run a railroad from Virginia City to the Carson River? "

"Yes."

" Do it at once."

The next day a party of surveyors were in the field along the mountain trails and highways. In a month the twenty-one miles of the route were mapped out, grading had been already commenced, and the rails had been ordered in England. Sharon himself had not been idle. He had formed his company, had bought out the necessary rights of those who had several moribund charters, and had obtained from the Legislature a new charter. More than this, he had secured legislative authority for the issuance of $500,000 in bonds by the counties of Storey and Ormsby as a free gift to the railroad. It is needless to add that the counties duly issued the bonds, and without making any conditions whatever. The mining companies on the lode subscribed $700,000. Rather a busy thirty days this, and well worth noting as an instance of Comstock energy.

Before April 750 men were at work, and by May 1,200, distributed in thirty-eight camps, strung along the line from Carson to Virginia City. Other gangs were hewing ties in the Sierras. On September 28th, the English rails having arrived, the first one was laid, and on November 12th the first engine reached Gold Hill. The road cost $1,750,000, and as much more was spent the next year in extending it to a junction with the Central Pacific at Reno.

What the engineers had done in the construction of this little railroad was to lay out a line with a grade of about 1,600 feet in thirteen and a half miles. The maximum grade is 11.6 feet to the mile, and the curves of the road in thirteen and a half miles of mountain distance make seventeen full circles of the track. It justly ranks as one of the noteworthy achievements of American mining camps.

Trouble followed fast enough: the fine old silver freighter, in Nevada slang the mule-skinner; the bull-puncher, swinging his oxen around the logging camps west of Washoe Valley; even that aristocrat of the fraternity, the lordly "silk-popper," flicking his playful whip at the leaders as he skilfully steered his loaded stages along the precipices down Gold Cañon to Silver City and Dayton—these, all these, after loud complaint and unavailing struggles, went their ways into the unrailroaded distance in search of new camps. "Sharon's iron mules," as they said, were too much for them. Some teamsters redoubled their efforts, determined to "beat Sharon or bust." One "train" hauled to Johntown in 1870 weighed, according to the Gold Hill News, 90,690 pounds, including the wagons; the ore alone weighed over thirty-six tons. But the locomotive beat them, for the engineers sought to surpass each other and made some astonishing records for the freight engines then in use. Finally a fourteen-horse team fell over the grade, breaking up the wagons and disabling the horses, and the freighters reluctantly retired from the unequal contest.

Cost of transportation was decidedly reduced by the railroad. Ore went to Carson for two dollars a ton where before it had cost three dollars and a half, and this made it possible for the mines to work lower grades of ore, long thought too poor to pay expenses. Cord wood fell from fifteen dollars a cord to eleven dollars and a half. As many as forty-five freight trains went daily over the road. The mines, the mills, the freightage, were now in the hands of the syndicate, and it began to reach out to control both the timber supply and the water supply of the Comstock.

Meanwhile the real condition of the mines had been a constant source of profound anxiety to Sharon and his associates. None knew better than they did that although borrasca had put them into possession, a few more years of borrasca would utterly smash their fortunes. They had acted with singular discretion and energy, had originated and carried out great conceptions, had dared to build their railroad in the darkest hour of their enterprise. What next? They held many an anxious consultation about the mines. The bullion product of the lode which had been $16,000,000 in 1865 fell to $11,739,100 in 1866, rose somewhat the next year, fell heavily to $8,499,769 in 1868, and still further to $7,528,607 in 1869. Fewer tons of ore were being raised, and the ore was of lower value. The "bonanza raisins" in the great Comstock plum pudding, to use a comparison once made by John W. Mackay, were taken out, and, so far as any one knew, there might be no more. In fact, the most experienced miners now held that any future deposits of ore would be smaller and leaner than before. Mining observations elsewhere had seemed to show that there was a line a few hundred feet down that marked the limit of pay ore. Besides, the Comstock lode was different from any other in the impossibility of tracing much if any connection between one ore body and another. The ores as the mines descended were not only poorer but more refractory, and the quartz "gangue," or vein matter, was changing to carbonate and sulphate of lime, which seldom contained ore.

There had been eleven bonanzas up to 1869, and all of these were now nearly exhausted. Ophir was without pay ore; Gould and Curry and Yellow Jacket were yielding less than one fourth their usual product; at the south end even the richest of the Gold Hill mines were in a bad way. The solitary cause for hopefulness was the fact that a very narrow vein of promising ore, a mere stringer that might develop into something better, had been found in Yellow Jacket in November, 1868. It was on the 900-foot level, and had been carefully studied by all the members of the syndicate, but for some time it led to nothing. A struggle with the

Miners' Union and a disastrous fire in the mines added still greater intensity to the situation. Some of the members of the syndicate began to weaken toward the end of 1870; it was whispered everywhere that the Comstock had paid its last dividend; the cities on the lode were already trembling upon the verge of panic—when an apparently barren portion of the Comstock became of the first importance.

Crown Point mine, 540 feet on the lode, had paid no dividends for some time; had in fact levied $240,000 assessments. The superintendent was the noted John P. Jones, since United States Senator, an old Californian who had been in Nevada only a short time. From the spring of 1868 till November, 1870, he had hunted in vain for ore by drifts on the 900-, the 1,000-, and the 1,100-foot levels. Everywhere were barren quartz and porphyry. The stock fell to a price which rated the total value of the mine with its $140,000 invested in machinery alone at only $24,000; the owners would not pay another assessment. But late in 1870 the character of the rock in a new drift that Superintendent Jones was running showed slight changes. The hard, gray porphyry that the miners had been cutting through in every direction for years began to grow softer, with streaks of quartz and red, rusty lines. Some two hundred and forty feet from the beginning of the drift a seam of clay was found. They cut this, and soft white quartz was entered which proved to contain small knobs of ore. The value of the stock rose to ninety dollars on the strength of this promise. By May a cross-cut from the 1,200-foot level entered the same formation, and the price of shares went to one hundred and eighty dollars.

Alvinza Hayward, receiving private information, began to purchase at two dollars a share, and finally obtained control of the mine, but he did this as an individual, not as a member of the famous Bank of California syndicate. This was Sharon's first and almost only defeat during his career on the Comstock. The Union Mill and Mining Company lost because Crown Point made contracts elsewhere, and its new owners organized the Nevada Mill and Mining Company as a rival to the Bank of California.

But the lesser defeat was merely an incident of the larger success of Sharon and his group. Every other mine on the lode became much more valuable. Money poured into the emptied treasuries of the mining companies still in borrasca, and the Bank of California was placed out of danger for the first time in several years.

Crown Point was one of the Gold Hill group. Its bonanza increased the total yield of the district from upward of eight millions in 1870 to upward of eleven millions in 1871, and this total, swelled by contributions from other mines that had begun to get into the line of deep bonanzas, was $13,569,000 in 1872. The total yield of Crown Point between May, 1864, and May, 1877, is estimated as close upon twenty-five million dollars. Crown Point stock reached its highest point in 1872, when it sold for $1,825 a share—a valuation of about twenty-two millions for a property that only eighteen months earlier had been rated at $24,000. This shows the popular estimate of the new bonanza.

Thus, as we have seen, the period of litigation over the surface bonanzas was followed by a long and almost universal depression in the values of the various mines, which was suddenly ended by discoveries made in a hitherto barren mass of porphyry. The uses and opportunities of mining adversity were never more evident, for the period of borrasca enabled the Bank of

California syndicate to accomplish what would have been impossible a few years earlier or a few years later. A new group of men had found their longed-for opportunity and had many times multiplied their fortunes by the dangerous venture. Even Sharon in the fulness of his power could not prevent others from sharing in the results of his organizing abilities; and although he had long planned to be master of every bonanza on the lode, through prior information and larger capital than his associates, he was finally conquered by Jones and Hayward in the struggle for Crown Point.

CHAPTER XVI.

DAYS OF THE GREAT BONANZA.

The discovery of Crown Point's bonanza in 1870 had increased the value of all the mines on the Comstock by about $45,000,000. A still greater bonanza—the one by which the fame of Nevada was spread abroad in every land and every tongue—was near discovery, even while Senator Jones was running the fateful drift that raised Crown Point stock within a year from $2 a share to $1,825 and lifted stock of Belcher, the adjoining mine, from $1.50 a share to $1,525.

Even while Hayward and Jones were dividing control of the productive mines of the lode with Sharon and other members of the Bank of California syndicate, two Irishmen, John W. Mackay and James G. Fair, were obtaining the fulcrum upon which to poise and turn to their own purposes the most valuable portions of the whole Comstock lode. Three San Francisco men—James C. Flood, William S. O'Brien, and J. M. Walker—were soon joined with them in mining enterprises. Flood and O'Brien had been retailing liquors in a large San Francisco saloon. Walker soon sold out his interest to Mackay for $3,000,000, lost it in bad investments, and died in poverty. The others became the four "bonanza kings" of the period, and their rise forms one of the most romantic chapters of mining life in America. It seems to represent in a typical way the splendid and fortunate element that one likes to think of as belonging to every mining district. It better explains the fascination that abides in the very name "Comstock" than all the strange and interesting details about the mines themselves.

There was a Dublin-born youth of eighteen named Mackay, a shipbuilder's clerk in New York, who was placer mining in California in 1852. He saved a little money and lost it, saved a little more, and moved to Virginia City in 1860. Here he began to run a tunnel on a claim, used up his available funds, and went to work in the Mexican mine as a timberman underground at four dollars a day. That job finished, he swung a shovel and pick for the same wages.

James G. Fair was a Tyrone lad of eighteen when he took the California gold fever. He mined on the Feather River bars for several years, with little success. Then he tried quartz, and became superintendent of a Calaveras mine. In 1860, like Mackay, he went to the Comstock, and was made superintendent of the Ophir, on a good salary, of course, but otherwise, seemingly, as far from the ultimate ownership of any mine on the lode as the most ordinary miner under his supervision.

In 1860 both Fair and Mackay (like John P. Jones, the discoverer of Crown Point bonanza) were poor and obscure men. Finney, Comstock, O'Riley, McLaughlin, and the rest of the first owners of the lode had much more money and far better opportunities than Mackay, Fair, or Jones, who became the three most famous miners of the district, and, it is no exaggeration to add, the three leading silver miners of America. Flood and O'Brien were mere speculators, not miners. They paid assessments, but did nothing else to find and gather the golden harvest. Flood developed great financial ability, but O'Brien was, and remained till the day of his death, a very commonplace individual of mediocre talents.

Sharon had come to the Comstock with capital in his control, so that at one time it was said he directed the management of every productive mine and every operating mill, besides the waterworks, the lumber supply, and the railroad—altogether some twenty-five million dollars of real property aside from stock values. The new bonanza monarchs, Fair and Mackay, were about to raise a piece of seemingly barren territory, neglected and despised by Sharon, to the rank of an independent and more powerful kingdom, so that the Bank of California syndicate, rapidly recovering from the blow dealt it by the defection of Jones and Hayward, was to be permanently made a "second-rate power" on the Comstock.

Mackay and Fair, even as young men, deserved large success as far as constant labour and study and steady habits may be said to deserve it. One easily sees that both were strongly imbued with the narrow but powerful ambition to become extremely wealthy; that each in his especial line of work—Mackay as a miner, Fair as a mining superintendent—saved all he could and speculated with it for the sole purpose of becoming a mine owner; and, finally, that both were very hard students of mines and of everything connected with mines. When they met, each recognised in the other a kindred spirit, and they immediately joined forces.

But Mackay outranks the rest of the Comstock leaders, because his rise was more remarkable and his grasp of circumstances more firm. From a day labourer toiling in the lower levels he became superintendent of the Caledonia Tunnel and Mining Company. This was at Gold Hill. It had a hundred thousand shares, had yielded by 1878 $345,000, and had assessed its stockholders nearly a million and a half dollars. A few years later he became one of the principal owners of Kentuck, a very rich mine ninety-four feet on the lode, which up to 1880 had paid $952,000 in excess of dividends over assessments. Beyond a doubt, this purchase was made because of Mackay's rare and valuable faculty of discerning the best time to buy or to sell mining stocks. His cool brain, long weighing the chances of every inch of explorations in any mine he thought of speculating in, was steady in the midst of wildest excitement. His own statement is that he sought with all the powers of his mind and body to become "master and manager of the greatest mines in the world." Mackay's swift imagination and sanguine temperament, controlled by his ambitions, were secretly on fire with the possibilities he saw in the great lode. He dreamed and toiled, hoping to win in some way such power as Sharon had. Somewhere in that mountain mass, pierced a little way here and there by pinholes of drifts, there doubtless lay another bonanza. But in which mine?

After Mackay became part owner of Kentuck he received large dividends and was able to make another move. Hale and Norcross has been mentioned frequently in these pages. It was a mine from which much was hoped by the most competent authorities. It had immense unexplored territory and its equipment was unsurpassed. Mackay and Fair studied this mine; watched its shares rise early in 1868 from $1,260 to $2,100; saw also a complete collapse, until by September the price was less than forty-two dollars a share. This gave them a chance, and they controlled the mine at the annual election in March, 1879. Fair, leaving the Ophir, went in as superintendent, and in a few months it was again on the dividend list.

Old Comstock miners still speak with admiration of the "fine nose for ore" that Fair displayed as superintendent. His watchfulness, energy, and strictness of discipline were never surpassed in the mines of the period. He knew every inch of the miles of underground workings as well as the rooms of his own house, and far better than the miners themselves, each of whom stays on the level to which he is assigned. The new Hale and Norcross bonanza which he discovered and worked out at this period paid $728,000 in dividends in 1869 and 1870, more than half of which, of course, went into the pockets of himself and his partners.

One barren section of the lode is between the Gold Hill group and the Virginia City group of mines. On about twenty-five hundred feet here mere assessment work had sunk several million dollars; the stock was consequently at a very low figure. Mackay had always wished to conduct a thorough exploration of one of these barren mines. In 1869 he put money into Bullion and became its superintendent. Fair, a year later, was elected superintendent of Savage, still retaining his interest in Hale and Norcross. Four mines of note were now controlled by Mackay, Fair, and their allies; and they were too shrewd men not to get back all their investments as long as there was a stock market. Bullion, however, was always a badly named mine; no bonanza was ever found there, nor in Savage. The Bank of California group of operators began to feel better; it had not been much of a storm anyhow. In a few years more the million or so that Mackay, Fair, and the others had made by accident or by speculation would be sunk in unproductive mines. Mackay would be back in the face of a drift at four dollars a day; Fair, who was somewhat of a superintendent, could be made very useful if he would only give up his notions of being an independent owner. Meanwhile the Mackay firm, weakened financially but still undismayed, were determined to thoroughly explore another portion of the Comstock.

At the North End, between Ophir and Best and Belcher, there was a long-neglected chain of small locations occupying in the aggregate 1,310 feet. Only very small deposits of pay ore had been found in this group, near the surface, and the owners had lacked capital for extensive explorations. Still, the neglected 1,310 feet lay in the midst of rich property. Beginning at the north end of the Comstock and coming south, toward Gold Hill, Sierra Nevada held 3,300 feet, and, although paying no dividends, was being magnificently conducted, exploring every foot of its territory, and had its great shaft well down in the second thousand feet of distance. Next came Union Consolidated with 600 feet, followed by Mexican, of equal size. Ophir, which came next, held 675 feet. South of Ophir were the 1,310 feet of neglected claims. Still farther south, adjoining these claims, was Best and Belcher with 224 feet; then Gould and Curry's 921 feet of very rich ground, followed by Savage with its 800 feet, and this again by the 400 feet of Hale and Norcross. Here were two great groups of paying mines, equipped in the best manner, controlled by millionaires, and able to continue operating through a long period of borrasca. It is one of the most curious facts in the story of the Comstock that this little row of long-despised claims, flanked on either hand by great rich and prosperous mines, should have sat so long disconsolate, a mute Cinderella in ashes of pioneer hopes.

In the course of time several of these minor claims were united into Consolidated Virginia, 710 feet on the lode. Then the new owners spent $200,000 in vain prospecting till the shareholders refused to pay another assessment. By February, 1871, actual sales showed that the mine was worth only $26,000, or less than a quarter of the price of the machinery. As for California ground, the 600 feet between Ophir and Consolidated Virginia, it had now sunk even lower in public estimation. The entire 1,310 feet was a bankrupt piece of property worth in the market less than $40,000, as shown by occasional sales; really not worth half so much, good operators said, for an investment or as a speculation.

Mackay, Fair, Flood, and O'Brien, regretting their losses in Bullion, had resolved to stake their fortunes upon the exploration of this comparatively virgin ground to great depths. The four operators began to gather in stock, but even the most consummate skill and caution could not secure control at the lowest figure—that of less than $40,000 for the whole 1,310 feet. They paid, it is said, about $100,000 before they were satisfied to announce their control, by which time they had about three fourths of the stock of both California and Consolidated Virginia locked up in their safes, and they took possession in January, 1872.

The new mine owners first turned their attention to the development of the 710 feet known as Consolidated Virginia. During 1872 they levied assessments to the amount of $212,000 upon Consolidated Virginia stock and spent it all in development. They sank a large shaft and pushed a drift north from Gould and Curry through Best and Belcher (1,167 feet below the surface) into the ground of Consolidated Virginia. This was done, of course, under especial arrangements with the owners of those mines.

Fair was superintendent, and at last, in driving this costly drift through barren rock, his experienced eye discovered a slight change and a narrow seam of rich ore hardly thicker than a knife-blade. He ordered the men to follow it with the drift inch by inch through the vein matter. They did so, even where only a film of clay showed where the thin ore streak had "pinched out." After a while the slender clew was again picked up, and so Fair and his workmen followed the dark line of silver sulphurets through the labyrinths for hundreds of feet. Fair became ill, and the drift, though managed by old and experienced miners, was run far east of the clew while he was absent, but on his return he went back and picked up the ore thread. The drift was now a hundred feet into Consolidated Virginia without anything of importance having been found. The value of the mine, which had greatly increased when the four bold speculators gained control, began to decrease, and it was thought that outsiders would hardly stand another assessment.

While matters were in this condition and people were saying that the daring operators had come to grief, the metallic film so long followed by Fair with his "fine nose for ore" rapidly widened to a seven-foot vein averaging sixty dollars to the ton. Cutting across this vein and extending the cut at each side, two narrower veins were found. After a month's further progress the main vein was twelve feet wide. The shaft which was to reach this ore body was being pushed night and day until early in October it reached the desired point, and the exploration of the ore body was then carried on with system. Where the shaft struck ore, at the depth of 1,167 feet, the width of the body was now forty feet. The miners were not yet "in bonanza," but they felt themselves very near to it. Plenty of pay ore was in sight, and they had an ore body of unknown size to explore, measure, and assay before taking it out. Running a drift southeast from the bottom of the shaft for two hundred and fifty feet, it cut into a very rich body of ore, a true bonanza, as they knew at once, though they were of course ignorant of its extent.

It was high time to have some recompense for years of costly and unremunerative exploration. On October 16th the skilled and athletic miners began to "breast out" and extract the ore in the chamber. By the end of the month they had hewn out a space twenty feet high and fifty-four feet across the bonanza, supporting it with square sets of timbers as fast as they removed the ore. They had also extended the drift one hundred and forty feet farther through the vein, and every inch of it was still in ore. The sides, the floors, and the roofs of chamber and of drift assayed everywhere at rates that ranged from $90 to $630 per ton. The top had been pried off from Nature's huge treasure-vault.

October was a month of such work as had never been seen before on the Comstock or in any other mine known to history, and it was only the beginning of still greater exploits of disciplined labour, as shifts of brawny men, stripped to the waist, toiled in the depths in the way that sailors toiled at Trafalgar between the decks of fighting ships of the British line. The shaft was sunk steadily three feet a day, and at the 1,200-foot level a drift showed that the ore body continued and grew wider. By this time it began to be said in Virginia City that the Consolidated Virginia "had a good mine." That was all. The matter was kept so quiet that no excitement occurred in the stock market. The directors had met, however, and had increased the capital stock of Consolidated Virginia to

108,000 shares of $100 each; they soon put the California upon the same basis, and retained control in both mines. Consolidated Virginia was taking out two hundred tons of ore a day at the close of October, and in a short time the bullion shipments were $250,000 a month.

The work of exploration went on, and the immensity of the ore body was more and more plainly revealed through the winter of 1873 and the spring and summer of 1874. The bonanza was cut across at a depth of 1,400 feet, and also at the 1,500-foot level, in 1874. Here the ore was of such unparalleled richness that for the first time the outside world of mining men and speculators began to talk about it. How much farther it might extend in depth or width, or how many of the North-End mines might finally be found to have a slice of it, not even the skill of the four bonanza owners could determine. But so carefully and steadily had the work progressed that no one had been startled by the sudden development. The richest hoard of gold and silver that had ever dazzled the eyes of a treasure-seeker caused for a time less excitement than the every-day strikes in small mines.

The truth is, Mackay and Fair were not interested at this time in the stock market. They had control, and all they wanted was to be let alone. They were not speculators any more; they were simply miners; neither of the mines were for sale, nor did they care to buy any more mines. Their restless ambitions, so long unfulfilled, wished to reap golden harvests from acres of ore. There was so little attempt at concealment, in sharp contrast with the course that had been pursued in regard to the earlier bonanzas, that it is probable this really caused the apathy that long prevailed among the masses of stock speculators. When

Down in a Gold Mine.

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the capital of Consolidated Virginia was increased to 108,000 shares they sold at about forty-five dollars, gradually rising to par value ($100), and early in November, 1874, to $115. Shares in California were much cheaper, and in September, 1874, had only reached $37.

There were "short turns" and speculations numberless in the stock during the year and a half that followed the ore-find of March, 1873, but, all in all, the inability of the stock speculators, both leaders and masses, to comprehend the greatness of the discovery seems inexplicable. It is better to reverse the point of view and say that we have in this fact another fine illustration of the uncertainties of mining. Sharon and all his group of allies, and the shrewdest of outside San Francisco speculators, thought for months that the gigantic energies spent in further explorations in Consolidated Virginia was because the ore body was not very large after all, and because new deposits were being sought for. As soon as they became convinced that the bonanza was really unprecedented in magnitude they hastened to buy heavily, but by this time the general public had been roused to a sudden fever of excitement and the value of the famous mines rose every hour on the stock boards. In December, 1874, Consolidated Virginia reached $610 per share, rising again in January to $700, which made the selling value of the mine $75,600,000. California stock went even higher, for it was said that the bonanza extended over from Consolidated Virginia in such a way as to give the California mine the larger part. California shares worth $37 in September rose to $780 in January, 1875, making the valuation of that mine $84,240,000. The 1,310 feet on the lode which had been valued five years before at forty or fifty thousand dollars was now worth in the market, according to stock sales, about $160,000,000.

Leaving the stock market, let us return to the depths of Consolidated Virginia. During 1874 the miners had been searching systematically through the ore bodies. They made drifts and crosscuts on each level, extending their work far north into the California; they made winzes from level to level to use in removing ore. They proved that the width of the mass was from one hundred and fifty to three hundred and twenty feet, and that the richness continued without abatement through drift after drift, level below level. The ore output increased, and a dividend of three dollars a share declared in May, 1874, had been followed by others. "The scene within this imperial treasure-house," writes Mr. Lord, "was a stirring sight. Cribs of timber were piled in successive stages from basement to dome, four hundred feet above, and everywhere men were at work in changing shifts, descending and ascending in the crowded cages, clambering up to their assigned stopes with swinging lanterns or flickering candles, picking and drilling the crumbling ore or pushing lines of loaded cars to the stations on the shaft. Flashes of exploding powder were blazing from the rent faces of the stopes; blasts of gas and smoke filled the connecting drifts; muffled roars echoed along the dark galleries; and at all hours a hail of rock fragments might be heard rattling on the floor of a level, and massive lumps of ore falling heavily on the slanting pile at the foot of the breast."

When the fifteen-hundred-foot level was reached and the ore cut into was richer than ever before known on the Comstock, the Territorial Enterprise, of Virginia City, came out with double-leaded columns, under the heading of Heart of the Comstock. Of the lowest cross-cut the Enterprise said: "It has been bored into the bonanza through a mass of chloride and sulphuret ores which excites the imagination of all beholders. It is now in two hundred and five feet, ninety-five of which is in the extraordinarily rich ore of which so much has been heard. In this crosscut was encountered, a day or two since, the stephanite, a species of ore that is almost pure silver. At the distance of one hundred and eighty feet from the crosscut a chamber of about ten feet each way has been excavated. Its walls on every side are a mass of the finest chloride ore filled with streaks and bunches of the richest black sulphurets. It looks as if the whole mass grew richer with every foot of the advance." Ores of this kind assay up into the thousands of dollars, but it seemed impossible that such large masses of silver should have been deposited, even in the Comstock, so the Enterprise reporter brought his estimates down to one hundred dollars a ton, reduced the size of the deposit, and figured out $116,748,000 in sight.

It is no secret on the Comstock that this reporter was William Wright, widely known on the Pacific coast as "Dan De Quille," one of the best living writers on mining subjects. He had been through and through the mines hundreds of times, and had really made the reputation of the Enterprise for accurate mining news. There was no one else to do his work; if he went away for a vacation, the proprietors were pretty sure to telegraph that his substitute "was getting fooled every day underground," and he had to hurry back again. He was the first outsider to see the great ore body, and his own account of the circumstances under which he received an invitation to examine it is very characteristic.

"The San Francisco newspapers," said he when interviewed, "had been saying for a long time that there was no ore in Consolidated Virginia; that people were getting up a stock deal. Some of us happened to know, however, that Fair had been quietly taking ore out of the mine through the old Bonner shaft. One day he drove up to the Enterprise office and came in.

"'Those city papers have been abusing us long enough,' he remarked; 'I won't stand it! Where's Dan? I want him to go down to the mine. I'll show him what we're doing.'

"This was before any one had definite knowledge of the strike. It was before the Enterprise had printed anything important, you understand—only rumours or street talk. When I had been in the mine before I could not get into those drifts. Fair spoke pretty loud, as if he only wanted to shut up the city papers, but probably he had all the stock he wanted and had just got ready to tell the truth; I don't know. Anyway, I jumped up and ran out when I had the word; you never saw a reporter go faster. We drove to the mine and went down to the richest place in the bonanza.

"Fair said: 'Go in and climb around. Look all you want, measure it up, make up your own mind; I won't tell you a thing; people will say I posted you!' And so he went away. That just suited me. After I was through I went to the Enterprise office and wrote two articles, one of which you have just quoted from. That was the first authentic account of the big bonanza, and that was the way the Enterprise had a scoop."

A little later a visitor to the mine "stood where the miners were digging ore, and looked a hundred feet upward and on each side across the ore body. On all sides of a pyramidal mass of timbers, growing larger each moment under the toil of busy hands, were twinkling stars of lamps where men were hewing at the sides and ceiling." Often the sides of the huge cavern glistened as if set with silver; but this was not silver —only crystals of iron and copper pyrites. There were also great masses of blue, purple, and white crystals of quartz, some of them weighing many pounds, with crystals several inches long. The miners say of a vein that contains such crystals that "it is alive" and think that the best of signs of a large bonanza. Chloride silver ore is pale-green and steel-gray in colour. "Silver glance" is black and lustrous. The general colour scheme of the great bonanza, despite an occasional glitter of crystals, ranged from bluish gray to deep black.

All of the contents of the bonanza were sent to the mill just as it was blasted or hewn out. Some of the ore was so rich that waste rock and low-grade ore were mixed with it in order to work it better. An average block of ore three feet square contained from three hundred to five hundred dollars in silver and gold. Even in the widest part of the ore body, three hundred feet across, the entire contents were milled without assorting. Some of the richest ore was near the line of the California mine, where a mass of porphyry crowded the ore into less space. The silver here was often in the form of crystals of stephanite, or in bunches of pure and malleable silver, in coiled wires, and in silver crystals. There is hardly any more beautiful sight in a mine than a "nest" of wire gold or wire silver gleaming in the dark sulphurets. A few of the more exquisite combinations of metals and crystals that occur at times in mines of the first rank are still preserved in cabinets, but by far the greater part have been destroyed, sent to the mill if valuable mineral, or to the dump heap if unremunerative. Old miners in some of the famous mines tell stories of cavities as large as an ordinary room into which a drift will sometimes break; cavities set thick with rock crystals of every beautiful colour known to the mineralogist—white, pale pink, olive-green, rose, purple, or violet. In such a glorious place it seems, even to the ignorant miners, as if the jewel caskets of monarchs had been surpassed, for here Nature has the hues of sapphire, emerald, tourmaline, amethyst, chrysoprase, opal, and lapis lazuli. Such crystal rooms are extremely rare, and more often occur in New Mexico and Sonora than in Nevada districts. One ore chamber ten feet square, situated about fourteen feet south of the California line, seemed to Comstockers the richest part of the lode, and many specimens of ore from here were saved for collectors in various parts of the world.

Now that the Pacific coast was stirred with the great news, estimates of the actual "ore in sight" began to be in order. I have alluded to the first newspaper estimate of about $116,000,000. Next came Mr. Diedesheimer, the inventor of the "square-set system" and one of the most careful mining engineers on the Pacific coast. He reported to the directors that there was $1,500,000,000 in sight, and added that each mine ought to pay in dividends $5,000 a share under proper management. A little later he gave proof of his faith in his own report by putting every dollar he could raise into shares in the two mines at the highest price. Even the director of the Carson mint, with his assistants, who examined the bonanza, was unable to fix any definite limit to its yield, and thought there was not less than $300,000,000 already in sight. Mackay, however, a miner of unsurpassed judgment, utterly refused to make any estimate, and flatly said it was an impossible task, because barren masses of rock, porphyry, the difficulty of obtaining accurate assays, and many other elements of uncertainty made calculation absurd. He "preferred to mine it out first and then take the milling returns."

The public made loud demands for estimates, and for a thousand other details, often beyond the power of human ability to satisfy. Whatever was said or was left unsaid, the men who controlled the bonanza were abused and misrepresented. That was a part, and no small part, of the price they had to pay for their fulfilled ambitions. Powerful though Mackay and his companions were in their own field, neither they nor any other men could control the genius they had released from the casket of the bonanza. The actual available capital of the Pacific slope that could be put into mining ventures in January, 1875, was not greater than $20,000,000. To tie up more than this in such investments or speculations would be to injure and seriously check the growth of the western third of the continent. Now, as I have already shown, the stock-board valuation put upon the two bonanza mines in that month was $160,000,000. It is not likely that more than a fourth of the stock was ever in the market, but the entire Pacific coast, as above stated, could not have bought and paid for more than twenty millions' worth.

Then, too, in addition to the immense and probably justifiable valuations put upon the Consolidated Virginia and California, every other mine upon the lode had greatly risen in estimated value. The prices paid in January, 1875, showed that Ophir had risen to over $31,000,000 because it was next to the bonanza mines; Best and Belcher was rated at nearly $9,000,000, and Mexican a trifle higher; Gould and Curry, Savage, Exchequer, Yellow Jacket, Overman, Bullion, Crown Point, and several others were valued at from three to twenty millions apiece. It made little or no difference where they were located. Indeed, the theory was now held by most speculators that every so-called "barren" place in the lode would prove to have immense ore bodies somewhere below the thousand-foot level. The total valuation of all the mines on the lode at this date was $393,253,440. How much gold coin would really have been needed at this time to buy not merely the floating stock in the market, but also enough to control every mine on the lode is hardly to be estimated. There was not enough coin in America.

Evidently, even if all the Comstock mines had been worth the price asked, California and the rest of the Pacific coast did not have a tenth part of the available capital to sustain such a valuation. When the transfers at only one of the three stock boards were $50,000,000 for a single month, it is evident that the pace had been set pretty fast, for prices had now become so high that nearly every one was compelled to buy on a margin; there was not money enough to do otherwise. Naturally the "shorts" had their innings. A few stories that the bonanza had given out started a ruinous panic at the close of February that completely demoralized the money market. Consolidated Virginia fell two hundred dollars per share in a week. California lost sixty per cent of its market value. Other stocks on the lode and outside fell in much greater proportion. The result spelled ruin in large capitals to thousands of families. The Bank of California failed in August of that fateful year, and Ralston, the mainspring of countless enterprises, died in the waters of San Francisco Bay. The entire community staggered under disasters brought on by wild speculation in stocks. It was the Black Friday of the State of California.

The public charged Mackay, Fair, and their comrades with speculating in their own stocks, and so creating the alternate panics and short-lived booms of the great bonanza period. Books were published —sometimes novels, sometimes bitter essays—that described with the sarcasm and emphasis or a Swift innumerable supposed crimes of the bonanza kings against the rest of humanity. Time, however, has caused many of these hasty accusations to be forgotten. The behaviour of the new-made plutocrats was not essentially worse than the behaviour of the earlier groups of bonanza owners. Mackay, the typical miner of the company, kept himself especially free from outside deals. Later, alluding to the crash in stocks, he said: "It is no affair of mine. I am not speculating in stocks. My business is mining—legitimate mining. I see that my men do their work properly in the mines and that all goes on as it should in the mills. I make my money here out of the ore."

Prices of shares had no influence upon the work in the mines. Through good days and evil the ore yield increased. Consolidated Virginia extracted about 12,000 tons in 1873, producing in bullion $645,000; in 1874, 91,000 tons, of a milling value of $4,981,000; in 1875, 169,000 tons, milling over $16,000,000; and in 1876, 142,000 tons, milling over $16,000,000. Then the product began to lessen. The exact amount of ore extracted in six years ending with 1878 was 682,385 tons. The bullion product was $60,732,882. California in 1875 and the three years following extracted 486,043 tons of ore, which gave the total bullion yield of $43,727,831. Nearly $105,000,000 was the product of the Big Bonanza, as Comstockers have always called this body of ore.

As for dividends, everything was done to increase them. The returns to stockholders were unprecedented in the stories of great mining enterprises. By the middle of 1879 Consolidated Virginia had paid fifty-two dividends aggregating $42,120,000, and California had paid in dividends $31,050,000. A thousand miners were employed; a new and much larger shaft was sunk. Mills and machinery had been rebuilt and enlarged at great expense. But all other duties had given way to the imperious necessity of taking out ore as fast as possible, so great were the dangers of a frightful accident. Every difficulty met with in removing other bonanzas seemed intensified in this case. The hot clay, feldspar, and ore seethed and swayed as the men worked. Forests of timbers, continually needing care and renewal, were rotting, breaking, and being crushed together. A single spark might make the mine a pit of flame, and probably would so cave and ruin it that it could only be reopened by years of labour and at vast outlay. Mackay, keenly alive to the ever-present dangers of fire and collapse of the supports, left nothing to chance, but inspected the drifts in person night after night. His tireless vigilance had its rewards, for no accident happened until the bonanza was fairly worked out. A few years later fires broke out in some of the abandoned levels of both the mines, and the men bulk-headed all the connecting drifts so as to shut the air out. The timbers smouldered for weeks, and the drifts finally became totally unfit for passage—a very labyrinth of traps and pitfalls shunned by every miner to this day.

After 1879, the close of the bonanza period came with exceeding swiftness. The stock of the thirty mines on the lode, valued in 1875 at over $393,000,000, sank in February, 1880, to something less than $7,000,000. California sold for $1.25 a share and Consolidated Virginia for $1.90, and so on down the forlorn list. How had the mighty fallen! The great bonanza, after yielding in five years nearly $105,000,000, was exhausted, and nothing even approaching in value to the earlier group of ore bodies has since been discovered. Hundreds of thousands of tons of low-grade rock have been taken out of long-neglected portions of the mines and worked at a profit, small dividends have been paid by a few mines, and the working efficiency of the lode has been well maintained. There may be new bonanzas in the depths or new grains of metal hidden in husks of porphyry, but nothing of striking importance has since been found. Once more the endurance of the mine owners and of the towns on the lode is being severely tested. California ceased paying dividends in 1879; Consolidated Virginia paid its last dividend in 1880. Fourteen years of borrasca have ruined successive stockholders, have caused the decay of once-populous mining towns, and have, in short, come near to breaking the hearts of the brave old Comstockers.

CHAPTER XVII.

THE SUTRO TUNNEL.

In the days when Virginia City was founded there came to the collection of "dug-outs," tents, and brush huts a young man of small means but boundless energy. He was a volunteer in the Pyramid Lake battle with the Indians, and gave one of the most lucid and trustworthy accounts we have of that disastrous affair. He was afterward in business in Virginia City, and in 1861 he built a quartz mill on the Carson River. In a short time he became convinced that a deep drainage tunnel was absolutely necessary to the continued working of the great lode and he advanced this idea on every occasion, until people began to consider him a crack-brained enthusiast.

The notion appeared to most men entirely impracticable. The point at which Sutro wished to see the lode cut by a tunnel was nearly two thousand feet below the surface—much deeper than any miners in the early '60's thought it possible to carry on operations. He scorned the lesser and temporary usefulness of small, short tunnels from the heads of the adjacent cañons; what he advocated was a large tunnel from the floor of the Carson Valley, distant about four miles in a horizontal line from the lode.

It must be explained that a tunnel run into a hill so as to strike the ledge at some point below the surface is either for prospecting and ore-handling purposes, or it is purely a drainage and ventilation tunnel, or it combines to some extent these several uses. A mining country that contains high mountains and short, steep ravines is well adapted to tunnels, or adits, as mining engineers often call them. Sometimes they afford vastly more economical methods of opening up and working mines than by shafts, but, of course, in many cases there is no opportunity for tunnels. Sometimes when a ledge has been well prospected on the surface high up on a mountain the very first thing done is to run a tunnel often several thousand feet long, so as to strike the ledge, and then work up to meet a shaft started from the top. If this is five hundred feet from the end of the tunnel, the miners say they have "five hundred feet of backs." That is, they can take out that much ore by gravity alone, and so can handle it very cheaply.

Three or four years of constant study and active work had already made Sutro a man of note among his fellows in that cyclonic vortex of life and motion—early Nevada. He became widely known as a man of immense capacity for affairs; one who was gifted with unconquerable tenacity of purpose and fertility of resource. He gradually organized the enterprise known by his name, and for twenty years was one of the most interesting figures in the story.

Sutro soon gained the attention of Stewart, Ralston, and others; in fact, Stewart became president of the company organized in 1864 to construct a tunnel after Sutro's plans. The first Nevada Legislature, in February, 1865, passed an act granting a franchise, right of way, and other privileges to Sutro and his associates. The amount of royalty to be paid by the mines that would be benefited by the tunnel was left to subsequent agreement between the Tunnel Company and the owners of the various mines. After eight months of strenuous efforts Sutro secured contracts from twenty-three mining companies, representing, it is said, ninety-five per cent of the whole market value of the lode. In these contracts the mines were bound perpetually to pay to the Tunnel Company two dollars a ton for every ton of ore taken out after the tunnel had reached given points so that it could be used. The mines were to also pay a fixed rate per ton for the transportation of waste rock, *débris,* or any material from the mines, and of supplies from outside, besides a certain price for each and every person in their employ who passed through the tunnel.

The only requirement of the State Legislature was that Sutro and his allies should secure three million dollars by August, 1867, and should spend a certain amount annually in the enterprise. As soon as the mines had agreed to the various royalties and payments, which were considered very reasonable by all concerned, it seemed as if the chief obstacle was removed and capital could be secured. At this time, early in 1866, there was unbroken harmony on the lode in respect to the tunnel proposition. Sharon, Ralston, and the newly organized Bank of California syndicate were foremost in approval. Sutro was now arranging to obtain the capital, and Ralston furnished him with letters of introduction stating that the tunnel was practicable and could not fail to be very profitable. Meanwhile Sutro, anxious to protect his enterprise at every point, secured the passage of an act of Congress which defined and secured the rights and privileges of the Tunnel Company. During the fiercest of conflicts a few years later this act of Congress was all that saved the enterprise.

Thus protected, it would seem as if the Sutro Tunnel Company had nothing more to do except to sell stock or bonds and begin work. The mine owners had agreed to his terms; the State and the nation had given the strongest possible title to its rights, franchises, and lands. Its plans were now completed for a main tunnel of 20,489 feet from the Carson Valley to the shaft of the Savage mine. Two lateral tunnels were afterward planned, following the trend of the Comstock northerly and southerly from the Savage shaft. As finished, the total length of the main tunnel and the laterals is 33,315 feet, or about six and a third miles. There are longer and more expensive tunnels, but the reasons that make the Sutro Tunnel a remarkable achievement will appear in the further course of this narrative.

As soon as the Tunnel act passed Congress, Mr. Sutro laid the project before leading American capitalists. He finally obtained pledges to take three million dollars in stock, provided the Comstockers themselves would do something. Returning to Nevada and California, he pressed the scheme upon the mining companies with such energy that they subscribed six hundred thousand dollars, and granted him another year in which to complete negotiations for the three million dollars. Never was a project more unanimously supported by press and people, by labourers and capitalists, as the Sutro Tunnel scheme between the autumn of 1864 and the spring of 1867.

The reasons for this general support were very simple. The entire community followed the lead of the mine owners, managers, and chief speculators of the Comstock, who were supreme in politics, in social life, and in business. These owners and speculators had become persuaded of the need of a tunnel, and were inclined to become part owners in the enterprise so as to share the expected profits in royalties and new veins to be discovered on the line of the tunnel. Besides, the mines were not paying well, most of them were in borrasca, and if that continued long it would become necessary to reduce expenses in every possible way.

Suddenly came a thunderbolt falling from cloudless skies. The Bank of California syndicate, now all-powerful on the Comstock, changed its corporate mind, cancelled the subscriptions of its various companies, and issued a decree of financial outlawry against Sutro. The tunnel, it was said, could not be constructed—at least not by Sutro, nor by his friends. He was too independent and altogether outside of the controlling forces on the lode. A telegram was sent to the Nevada senators, Nye and Stewart, at Washington, saying, "We are opposed to the Sutro Tunnel project and desire it defeated." This was signed by William Sharon and most of the prominent mine owners, managers, and speculators. Senator Stewart instantly resigned the presidency of the Tunnel Company. Virginia City merchants and citizens began to fight the tunnel scheme. Thus Sutro's bright prospects of obtaining a million dollars in San Francisco, besides the money promised on the Comstock, were ruined in an hour. Everywhere, with telegraphic swiftness, active, aggressive opposition was raised. When the smoke of the first tumultuous assault cleared away, all men saw that Sutro stood alone, unsupported, while against him in organized and well-equipped array were the hostile companies, the hostile Bank of California, and the hostile mining and speculating communities of California and Nevada.

It was a strange and unexpected situation. Only one man out of ten thousand would have attempted another stroke; hardly one out of a million could have conquered his foes. Every pledge from New York capitalists was of course nullified. He had to raise between four and five million dollars for a purpose that the very persons to be benefited declared against their interests. He had to prove to investors that the Comstockers did not know their own business. He had to counteract in the newspapers, in legislatures, and in Congress itself the persistent assaults of men and associations possessing almost boundless resources —social, political, and financial.

Sutro, however, lived for but one object—to dig his "coyote hole," as the contemptuous opposition termed it. He went to New York and again tried to obtain capital; he went to Europe and saw the princes of finance. Men of science approved of his plan, but everywhere a warning against his tunnel seemed to forerun his coming. Undismayed, he appealed again to Congress, secured the attention of the Committee on Mines and Mining, and actually had a bill reported recommending that the Government should loan five million dollars to the Tunnel Company, taking a mortgage on its property. The impeachment of Andrew Johnson, soon after, prevented this bill from coming to a vote. All this time the fight went on in newspapers and pamphlets throughout the length and breadth of the land, but chiefly on the Pacific coast. Sutro answered every thrust with a parry and return.

Said Sutro in conversation years after: "Ah! it was a hard thing to see so many old friends in Virginia City and San Francisco actually afraid to be seen talking to me after the fiat had gone forth that I was to be crushed. But I kept on fighting. There was one time, I remember, when I had to go to Washington to save my interests from destruction. I had no money left. All the profits of my mill had been swallowed up. I had a town lot in a little California town, and I sold it for two hundred dollars. With that I managed to get to Washington. I staid there, somehow, all winter, poor as I was; I fought my enemies and I came out ahead. But they wrote to all the newspapers that I had bribed Congress—out of my two hundred dollars!"

At last, in sheer desperation, Sutro turned to the working miners of the Comstock. He hired Piper's Opera House in Virginia City and addressed them with bitter eloquence, every stroke of which went home. He denounced the unchecked avarice of the men who ruled the Bank of California and the famous Mining and Milling syndicate. What did they care for the toilers? What enterprise that tended to loosen their grip on every industry in Nevada could fail to gain their hatred? He went on to contrast, in brief, terrible sentences, the disasters from heat and fire to which the selfishness of these capitalists subjected them with the comfort and safety which the tunnel would afford. The increased profits under the tunnel system must also, he said, enable the mine owners to continue the Union scale of wages without protest for generations to come.

Sutro added immeasurably to the force of his appeal by showing to the miners, and afterward circulating among them, rude but effective campaign cartoons. One cartoon represented a rich speculator driving six fast horses and covering a working miner with contemptuous dust; another showed "Bill Sharon's big wood pile"; and still another "Bill Sharon's crooked railroad," so as to emphasize the fact that the Bank of California syndicate controlled the transportation and owned the forests. Still other cartoons illustrated with ferocious sarcasm many a well-known instance of careless disregard of the health and lives of the Comstock miners.

The series closed with a huge double cartoon that Milton might have conceived and Doré might have executed. A few months before there had been a fire in the Yellow Jacket mine and forty-two miners had lost their lives. It was an awful disaster; the terror of it still dwelt in the homes of the Comstock. Fire was yet smouldering in the drifts of the mines and likely to burst forth again, when Sutro sent forth his double cartoon, headed The Yellow Jacket Fire. On one side was a shaft a thousand feet deep full of burning and falling ladders, timbers, and machinery, a vortex of whirling smoke and flame, with hundreds of miners trying to escape and tumbling headlong into the depths; wives, mothers, and children were running to the mouth of the shaft or sinking in despair on the ground. In the other half of the picture was a similar shaft on fire, but with the Sutro Tunnel connection below, and the miners escaping to meet their wives and children.

Here are some sentences from Sutro's speech: "Will the people of Nevada see me crushed out now? Will you not see fair play when one man has the pluck to stand up against a crowd? Come in together; let three thousand labouring men pay in an average of ten dollars a month and insure the construction of the tunnel, carrying with it the control of the mines." Again: "The enemy who has spun his web around you until you are almost helpless has bribed your judges, packed your juries, hired false witnesses, bought legislatures, elected representatives to defend their iniquity, imposed taxes upon you for their private benefit, and now dares you to expose or oppose them. . . . I do not mean to incite you to any violence, . . . but I do mean to say that you can destroy your enemy by simple concert of action. Let all of you join together to build the Sutro Tunnel; that is the way to reach them. . . . They know that the first pick struck into the tunnel will be the first pick into their graves."

Thus, with tremendous invective, Sutro carried the war into Africa and laughed to scorn the shouts of "Demagogue!" that went up from the justly alarmed capitalists. He caused such a storm that in a short time he had to use all his personal influence to prevent an outbreak. But the Miners' Union raised fifty thousand dollars by subscription and put it into Tunnel Company stock. This enabled the resolute Sutro to break ground October 19, 1869. He now had to provide means for continuing work. He had to fight his opponents in Nevada, California, Washington, New York, and Europe. It was necessary, too, that this fight should be aggressive; he must have more money. In 1870 he obtained the promise of two million dollars in France, but the Franco-Prussian War destroyed this combination. In 1871 he persuaded Congress to appoint a commission of United States engineers to examine the Comstock and the plans of the tunnel. They reported in the main unfavourably. Such a report, if sustained by the Committee on Mines and Mining, could only lead to one end—the revoking of the franchise. Sutro, as usual, rose to the occasion, and forthwith succeeded in persuading the committee that the report was biased by his opponents; the committee reversed their first decision and advocated a loan of two million dollars by the United States. This bill was finally defeated, but its very presentation in Congress was a victory for Sutro. Even his enemies began to yield unwilling admiration to his bulldog tenacity. "That little German Jew will undermine the Comstock" became a saying among the capitalists.

In September, 1871, Sutro won his way to the purses of some English investors and obtained $1,450,000. This was afterward increased in America to a total of two million dollars. Immediately four hundred men were set at work in the tunnel and upon four working and ventilation shafts. Machinery was bought, shops and dwellings sprang up like mushrooms around the waste heaps, and the renewed energies of this volcanic man were concentrated upon a race against the Comstock mine owners who were fast approaching the level of the tunnel.

There was no time set by the act of Congress or any obligation of the company for the completion of the tunnel, but the general understanding was that the main line should be finished in three and a quarter years. This was based upon the calculations of the engineers, who proposed to work from four shafts as well as from the end of the tunnel, thus making nine separate stopes or headings besides some work that might be possible by drifting from the Comstock lode. But when these four shafts were begun, such torrents of water poured out of the porous rock that no machinery could be obtained to keep the two nearest the lode clear enough to work in; the other two, though finally sunk to the tunnel level, were often rendered useless from the same cause. Hand drills were used at first, and the rate of progress was slow; it would have required seven or eight years for the completion of the main tunnel. Besides, the increase of heat was extraordinary, and the atmosphere grew so bad at the face of the heading that competent authorities have doubted whether the tunnel would ever have been completed if the costly and complicated power drills just beginning to come into use at Mount Cenis and elsewhere had not been greatly improved by American inventors. Burleigh and Ingersoll drills soon changed the aspect of affairs. An interesting comparison made at this time between a famous Freiburg tunnel, the Rothschonberger Stollen, and the Sutro, is as follows: The German tunnel was advancing by handwork in gneiss rock from a single heading about twenty-six feet a month; the Nevada tunnel was advancing in andesite from a single heading one hundred and five feet a month. When power drills were introduced the advance of the German work increased to eighty-four feet, while that of the Nevada enterprise rose to three hundred and ten feet. The monthly advance of the Sutro Tunnel during 1875 and 1876 maintained an average of three hundred and eight feet, an unequalled record that attracted the attention of mining engineers, who declared that Sutro's "coyote hole" was the greatest undertaking in America.

Meanwhile the working miners of the Comstock were fighting their old enemies—water, heat, and lack of ventilation—and hoping for the completion of the tunnel. Mining superintendents, who still claimed that they needed no help from Sutro, were forced to acknowledge that the water plague was almost more than they could endure. "To chronicle such a contest," wrote one observer, "is to write down an unvaried record of flooded shafts and levels, of temporary drainage and new inbursts of water, or, more discouraging still, of broken pumps and of delusive gains, when the battle was really a drawn one and the pumps could only hold the rising water in check." The cost of pumping on the Ophir was seventy-two thousand dollars a year.

So matters progressed through the days of the

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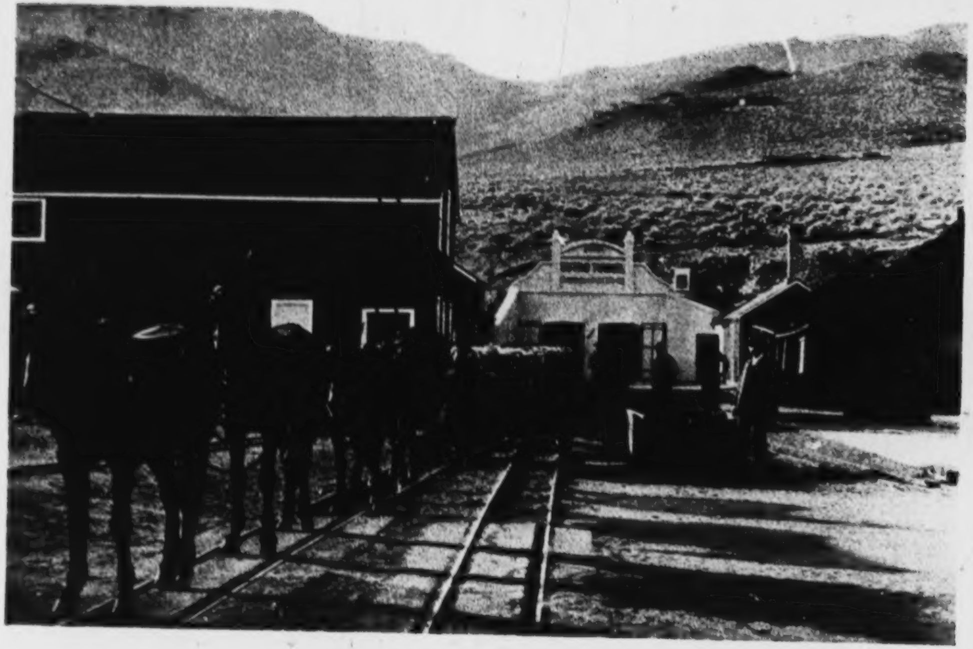

Entrance to the Sutro Tunnel, Sutro, Nevada.

Crown Point bonanza and the early days of the greater marvels of Consolidated Virginia and California—the mine owners steadily declaring that they would never use the tunnel; Sutro and his men hammering on beneath the mountain. Never were men and machinery handled with greater skill; picked miners in short shifts drove the advancing drills every moment of day and night and every day in the week; skilled timbermen propped the tunnel; young athletes threw fragments of hot rock into iron tram cars; long trains of mules and cars went to and fro under swinging lanterns. "Faster! Faster!" cried Sutro to his willing workers; "every ton of ore taken from the bonanza loses our company two dollars!"

In 1873 the temperature at the face of the tunnel was only 72° Fahr. It rose to 83° the next year, to 90° in 1876, to 96° in January, 1878, and to 109° in April. This was in spite of the most powerful blowers to be obtained which were used to force fresh air into the tunnel. The heading was nearing the Comstock lode and its solfataric springs. The lamps burned dimly; workmen at the front fainted at their posts. Another danger threatened them. Portions of the tunnel crumbled and fell, crushing the supports in places, and only constant vigilance and labour prevented a catastrophe which might have crushed the air pipes and killed every man at the heading. The workmen were two miles from the nearest ventilation shaft when this terrific heat was encountered, and it grew worse till the face of the rock showed a temperature of 114°. After May, 1878, two or three hours of work were all that the strongest and most experienced miners could endure. The mules often refused to enter the tunnel, and they were dragged by main strength from the air-escapes. It was evident that endurance was being strained to its utmost capacity. Man after man dropped down on the rocky floor and was carried to the surface, babbling and incoherent, to slowly recover from the poisonous air.

At last the miners in the Savage heard the blasts of Sutro's approaching tunnel, and then the blows of the power drills. On July 8, 1878, Sutro himself, half naked, like one of his miners, toiled at the front, and toward night, when the final blast tore a jagged hole through the wall of rock, he crawled through the opening, "overcome with excitement," as one of the newspapers said. The rush of hot air and smoke from the tunnel was almost unbearable to the men working in the cooler Savage drifts; clouds of dust, fine rock, and impurities, gathered in the tunnel during the nearly nine years that had passed since its commencement, shot upward through the shaft of the Savage.

The immediate goal was now attained, but a firm treaty of peace between the contending parties was essential. Most of the mine owners still said that they did not need the tunnel, and refused to stand by their contracts. A crisis came in 1879 when the Hale and Norcross pump broke and water began to flood several mines. The superintendents immediately turned the flow from the remaining pumps into the tunnel, driving out the workmen. Sutro began to put in a water-tight bulkhead. Either open war or a lawsuit carried eventually into the Supreme Court appeared the only alternatives.

Fortunately for all concerned, wiser counsels prevailed, and new agreements, which bound every company on the lode, were entered into. A thousand workmen began to cut a drain channel five feet wide down the middle of the tunnel floor, and by July it was in full use. The temperature of the water, even at the mouth of the tunnel, was never below 100° Fahr., and it often entered the tunnel at 130° and even 160°. The amount of flow in 1880 was not less than 1,300,000,000 gallons, and as other mines began to use the tunnel, the total annual drainage rose at times to nearly or quite two billion gallons. When work is again attempted on the lowest levels of the Comstock, for years left idle, the value of the Sutro Tunnel will be even more evident.

At the time of the completion of the tunnel the leading mines were using more powerful pumping machinery than had ever been applied to such purposes. Perhaps the power required in these engines is best shown by the size of the wooden pump-rods. Formerly made 12 by 12 inches, they were now made 14 by 16 inches, of sections of the best selected Oregon pine strapped together by iron plates, yet breakages were frequent. The Belcher pump-rod broke twelve times in eight months. It is estimated that the cost of handling the water in 1880 was three million dollars, even with the aid of the tunnel.

When his victory was complete, Sutro retired from the control of the tunnel, selling his stock at a high price and removing to San Francisco, and became one of the foremost citizens of California. He knew Nevada and the Comstock better than most men of his time, for he had been a part of the whole dramatic and eventful story ever since 1860. After twenty years devoted with singular courage and ability to a single purpose, that purpose had rounded into well-wrought achievement, and when he left the Comstock he was one of the most widely known men in America.

Even after Sutro left the Comstock his memorable "coyote hole" continued to share the fortunes, good or ill, of the great lode it drained. According to the report of Mr. Theodore Sutro, in 1887 the main tunnel had cost in round figures $3,500,000, and the laterals had brought this sum up to $5,000,000. What was considered in 1879 one of the larger possibilities of the tunnel has never been developed. Its friends constantly spoke of the "facilities which the tunnel afforded for the extracting and smelting of millions of tons of low-grade ore" which lay partly exposed to view in the two hundred miles of shafts and galleries, and partly still concealed in the depths of the Comstock mines. This ore was passed by in those days, though worth ten or twelve dollars a ton, because by the methods employed—the mills, the railroad, the hoisting works—it could not be worked at a profit. The Sutro Tunnel Company still claims that by water-power mills on the Carson this low-grade ore can be worked at six or eight dollars a ton, thus building up a new industry without injuring the towns on the Comstock. Unfortunately, the plan has never received a full and fair test. Though the tunnel company is said to have a great deal of low-grade ore in its own territory, lack of means has prevented thorough exploration of its resources, as well as the building of reduction works. The tunnel, like the great lode, has long been in borrasca.

CHAPTER XVIII.

OUTSIDE VIEW OF A MINE.

ALL this time, while describing pioneer life, early settlement, the bonanzas, the Sutro Tunnel, and many other episodes of the long story of the Comstock, one has necessarily made passing allusions to the buildings and machinery on the surface of the ground, and to the still more interesting details of the inside workings of the great mines on the lode. So much remains to be told, however, respecting the appearance of a mine of the first rank, "on deck" and "between decks," that this chapter and that which follows are devoted to mines and mine equipment as they appear at times of especial activity and high organization.

When a visitor goes to the Comstock he sees the ruins of many old mine buildings no longer in use, because much larger and more complete structures over the later shafts have taken their place. Of the more important large shafts there were twenty-four in 1880, several of them huge combination shafts used by more than one mine. The surface of the lode is so irregular that the altitudes of the tops of the shafts vary to an extent that would be surprising anywhere except in such a wild mountain region; the highest shaft, Bullion, begins 6,307 feet above the sea, and the lowest, the old Overman, begins 5,731 feet above the sea, showing a difference of 536 feet on the lode—enough to make quite a hill on a Western prairie. The surface workings of the Comstock are on the side of a mountain furrowed by immense ravines, where men have, with marvellous persistence and energy, hewn out or built up, on terraces supported by masonry, sufficient room for mine and mill buildings.

Any one of the great mines when in active operation will serve as a type of the general plan of outside works, the result of thirty years of experience under Comstock conditions. Nothing better can be found in the way of concrete illustration than the works grouped about California and Consolidated Virginia with the old shafts, the new combination shafts, the mills, yards, railroad tracks, trestle works, machinery, and all that so well represents the modern industry of mining. What one sees at the main works is a very large mass of high buildings, partly on the level, partly terraced down the slope, and still further complicated by wings, annexes, and various additions—all thoroughly well made and painted with fire-proof paint. Surrounding the whole and between the wings and additions are piles of iron, lumber, cord wood, separate buildings, and vast collections of supplies of every imaginable sort.

The main mass of buildings resembles nothing so much as the union of several large foundries and manufactories. A row of tall smokestacks steadied by steel cables mark the location of the engines, the blacksmith shops, and the machine shops. As one goes around the yards and the vast structures full of life and activity, the passing impression varies; here are flat steel cables woven or twisted, copper wire, steel bars, and hardware in a thousand forms; yonder are supplies enough, one would think, to stock a street full of wholesale houses. There is a powder house; there are offices for clerks and superintendents and a building where bullion is melted and assaying is done; there are also rooms for the surveyors, draughtsmen, and civil engineers. But there is no mine in sight anywhere.

Some idea of the variety of articles that come under the general head of supplies and are gathered together in the storehouses here may be obtained from a few notes of purchases made by a single mine (California) in 1877, when over $315,000 was spent for miscellaneous supplies and over $547,000 for fuel and for the timbers and iron used in the new shaft then being sunk. The "regular supplies" stored up and used above ground or sent down into the mines as required included the following large items: Timber, over 10,000,000 feet, costing about $224,000; ice, nearly 2,000,000 pounds, costing about $22,000; powder to the value of $17,000; candles worth $16,000; steel and iron, $5,000.

If we take the total expense account of the same mine for that year (1877), we obtain, perhaps, a more striking impression of the scale of operations. Supplies, as we have seen, were used to the value of about $315,000; salaries and wages came to about $788,000; cost of reduction was $2,220,000; of hoisting, $186,000; and of assaying, $53,000. Office expenses, teaming, surveying, taxes, litigation, and miscellaneous items, added to the above, bring the total to considerably more than $4,000,000. In such a mine the value of the outside works is nearly impossible to determine, for it is constantly changing. If there is no mill attached, half a million dollars would be a low estimate; complete reduction works add as much more to the total.

Everywhere, in the first view of a mine, lumber, firewood, and machinery are the most striking features.

The depths of the mine in the last thirty years have swallowed up fully 800,000,000 feet of timber—enough, if sawed into boards and scantlings, to construct forty thousand two-story houses of six rooms each. These would provide homes for two hundred thousand people. If the consumption of lumber had always been at the rate of such bonanza years as 1875 and 1876, the Comstock lode would now contain nearly three times as much lumber as this buried in its shafts and drifts, or sufficient for the homes of six hundred thousand people. Hundreds of square miles of forest have been cut to supply this inexorable demand, and every foot of timber used has been hauled to Gold Hill or Virginia City and piled in the lumber yards at the works.

The fuel used during the past thirty years has aggregated something like three million cords. It consists for the most part of yellow pine, pitch pine, tamarack, and fir, and vast tiers of it lie piled up at all seasons. In 1880 the Sierra Nevada furnaces used about sixteen thousand cords of wood, and four other mines used more than ten thousand cords apiece. Such a mine keeps six months' supply of fuel on hand, and even a smaller mine always has five hundred cords piled in the yard.

The machinery is of so many different types and is constantly undergoing so many changes, repairs, and improvements, that the foundries and machine shops at the mouth of a mine often seem as if they had been transplanted bodily to the Comstock from some large seaport. The immense power of the pumping engines has been noticed, but the total horse power represented by all the engines used on the Comstock affords a still better measure of the work done. The mines in 1880 had engines of a combined capacity of 21,000 horse power. Single mines have had 2,000, and even 3,000 horse power in use at times.

Outside of each of the vast structures is a pile of waste rock, the dump of the hidden mine. This is perhaps the most peculiar feature of the place, and if the mine that supplies it is of the first rank, the size of the pile is mountainous. A part of the waste rock sometimes goes to make acres of level ground on which to place the mine buildings and the quartz mill, but there is so much left to be poured down into the cañons that the sum total is really one of the most impressive things about Virginia City. Cars run out upon a track extending from the building far over the middle of the dump, and are emptied automatically. They flash back and forth all day, all night, every day in the week, and the waste rock and *dêbris* slide slowly to the bottom of the great dusty pyramid, on which no green leaf ever grows. Such a pile, much smaller, and of sawdust instead of broken rock, the lumber mills make along the Mendocino coast; but always these latter smoke and blacken with an ever-smouldering fire that burns unquenched for decades, and always the wild flowers of the forest grow in the very edges of the fragrant hills of sawdust. In strange contrast, the waste rock mountains of the Comstock are without life, colour, sound, or change, except the rattle of bits of porphyry and the sharp sunlight gleaming on whitening clays and splinters of stone piled on barren hollows above the sage brush.

The central building over the mouth of the large shaft sunk in partnership by the California and Consolidated Virginia mines, is high, steep-roofed and large, heavily framed, floored solidly and well, open to the roof forty and fifty feet above, and in every respect suited to the requirements. Men—dozens of them—quiet, busy men dressed in woollen shirts, small felt hats or caps, and blue overalls, are directing and operating affairs. Those whose duties do not take them down into the mines are in ordinary citizen's clothes. From the middle of the floor, through a row of four square openings, white columns of steam often rush upward in huge volumes rolling to the roof; it is the breath of the mines below, and in cold weather the warm lower levels send up these whirling clouds. The four openings are the tops of the four compartments of the shaft, which is not only lined on every side with square timbers, but is still further divided by perpendicular partitions. The timbering leaves these lesser parallel shafts about five feet square, and one is occupied by the pipes of the pumping machinery, while the other three are hoisting compartments.

This is the top of the mine; through these small shafts the business of the mine is carried on. The cages that move up and down may be compared to hotel elevators, only in this case the hotel is from fifteen hundred to three thousand feet high and pushed down into the ground so that everything except the roof is out of sight. The elevators begin at the roof and go down to the basement, past floor after floor, station after station, passageway after passageway, until the place is reached where another cellar is being hewed out.

Some sixty feet from the steaming shaft top is a large, square platform raised several feet above the floor. Here, on frames of massive timbers built upon solid rock and filled in with cement, are the hoisting engines; here the engineers sit under a placard something like this: "No person allowed on the platform, or to speak to the engineers." There is reason enough for the warning, for the lives of many men are in the hands of the engineer and his assistants. These mine engineers are strong, modest, manly—much such men as are in similar places of responsibility in the engine rooms of a Cunarder.

Before the face of each engineer is a large "indicator" like a clock, or sometimes in the form of a cylinder, which shows exactly where the cage is; beside it is the bell by which he communicates with the officers and workmen on the different levels of the mine. He stops and starts the cage, "slows up," goes ahead at full speed, receives word about the contents of the cage, and many other important matters. Safety cages are now used, similar in construction to the elevators in large buildings but much heavier, and one source of accident is thus removed. The mouth of each compartment that opens through the floor of the main building is closely covered with an iron grating which each cage lifts as it comes up, and the place is sometimes still further protected by a railing, so that few accidents occur at the top of a mine except through careless engineers.

The power of the hoisting engine is necessarily great. At the Yellow Jacket the two hoisting engines are each of 1,000 horse power. The main engine at the California and Consolidated Virginia shaft, everywhere known as the "C. & C.," is of 2,000 horse power; it lifts a cage with two cars of rock and handles a passenger cage at the same time. What would be called an average cable at one of these great mines is made of steel wire, woven flat, seven inches wide and five eighths of an inch thick; the pulleys are forty or fifty feet above the shaft mouth on a cross-beam supported by a very large and massive frame which is built around the mouth of the shaft and is called the "gallows-frame."

There are two kinds of cable reels. In some cases the cable is coiled directly upon a short reel; in other cases a drum is used. The latter is known as the tapering hoisting reel, which is a drum of very heavy wood turning with a wrought-iron shaft sixteen inches in diameter. On this base beam after beam has been bolted until the result is a structure fifteen feet long, thirteen feet in diameter at one end and twenty-two feet at the other. On the outside of the truncated cone thus obtained iron plates are bolted, and a deep spiral groove is made from end to end in the iron to guide and steady the cable as it winds and unwinds. The wrought-iron shaft turns in a framework that reaches quite through the floor of the building, and is sunk deep in solid rock and braced against every strain.

A steel cable such as is used on the Comstock weighs from twenty-five thousand to forty thousand pounds. In the case of those that taper regularly toward the lower end, where less strength is needed, the reduced size is not obtained by leaving out some wires, but by gradually tapering each wire in its manufacture. The flat cables are much preferred for heavier work, and were first made by Mr. A. S. Hallidie, of San Francisco, the inventor of the cable system of street cars so much in use in that city.

The engineers of the Comstock greatly increased the efficiency of their steam engines, so as to save fuel. The valve gear on compound engines was greatly changed. The hoisting engines were made to act directly upon the cables by keying the reel to the main shaft, increasing the possible speed with which the cables could be hoisted to three thousand feet per minute, a rate ten times greater than the utmost speed attainable before 1865.

Danger seems inseparable from such machinery. If an engineer loses his presence of mind for a second

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The Mouth of a Shaft.

while guiding the swift-flying cage, the men may be hurled to destruction. At the Union shaft, in 1879, the engineer, a careful and temperate man, was hoisting a cage with seventeen men from the bottom of the shaft; when they were near the top he started to shut off steam, but turned the lever the wrong way and the cage shot swiftly into sight. Losing his head entirely, the poor engineer threw the valve still farther over, and the cage, leaping upward, gleaming and terrible, struck the timbers of the gallows frame and snapped the seven-inch cable, which "parted like twine," making a report like the sound of a cannon. The cable flew backward and swung on one side, mowing down timbers and machinery as far as it could reach. It was like that most tremendous accident known on shipboard, the breaking loose of a gun amidships. The great building shook to the granite foundations, and men cried out that one of the boilers had exploded. When the cage struck, every man except two who clung to the shattered frame, and one who seized the bell rope, were hurled against the roof and fell dead, dying, or crippled on the floor.

One must not expect to see a close-walled box or steel cage for an elevator. The miners have only a heavy iron cage, entirely open on two sides and nearly so on the others. Some cages are single; some have two floors and are called double-deckers. The old-style three- and four-deckers have now gone out of use. Loaded iron cars come out of the depths and are at once hooked to a cable that pulls them from the cage along a track on the floor of the building, or they are rolled out by men in waiting. If the contents are worthless, the cars are quickly switched to the dumps and so disappear; if they consist of ore for the mill, they go to one of the most important and complicated of all the huge structures that cluster around the mouth of a Comstock mine.

The Consolidated Virginia mill as built in bonanza days has sixty stamps of eight hundred pounds each, forty pans, four agitators, and twenty settlers, and is capable of reducing two hundred and fifty tons of ore daily. The California mill has eighty stamps of nine hundred and eighty-four pounds each, forty-six pans, four agitators, and twenty settlers, and can work three hundred and eighty tons daily. The sixty-stamp Consolidated Virginia mill is a good type of the more modern improved work of the Comstock. Let us follow the course of an ore car from the mouth of the shaft and see what happens to it.

This mill is built near the rest of the main structure on a lower level. A car track nearly three hundred feet long leads straight from the mouth of the shaft in the main building to the roof of the quartz mill. It is supported forty-five feet in the air on trestle-work, and is boarded over its whole length with rows of windows on each side, so that it "resembles nothing else so much as a ropewalk." The ore cars are made up into little trains and hauled to the top of the mill by mules. One of the famous mules in bonanza days was known far and wide as "Mary Ann Simpson." Tradition had it that she knew more about mill work than any man employed in the mine, and she had certainly hauled millions of dollars from shaft mouth to mill. In some mines the ore is carried by an endless belt in buckets on a cable, or the cars are drawn by a cable run by a shaft from an engine.

When dumped, the ore falls into chutes in the roof of the mill, and what the Californian hydraulic miners first named "grizzlies" are set in the bottom of each chute. A grizzly is a screen of parallel iron bars three inches apart, in most cases, set sloping, and loose at one end, so that while the finer rock goes through, all larger fragments roll into the jaws of a rock breaker, whence, after having been sufficiently crushed, the material goes through another chute into the main ore bins to which the smaller rocks went at once. In the hydraulic mines, where sets of grizzlies are sometimes used to keep boulders out of the flumes, the mingled roar of the foaming waters, the harsh crashing of rolling rocks, and the clang of quivering bars of massive iron can be heard a long distance. It is one of the noisiest things about such a mine, but its name does not seem very appropriately taken from the monarch of the Sierran wilderness, whose tread, though lumbering, is noiseless, and whose loudest utterance is a menacing growl.

Returning to our typical mill on the Comstock, the ore bin where the crushed rock falls is one hundred and ten feet long and the contents are fed by chutes to the eight batteries of ten stamps each. The mill building stands upon ground that was terraced in the most careful manner, so that the different parts of the structure stands upon different levels, as is required for the most perfect economy of labour and time. After the ore is once delivered at the top of the building, gravity is made to do as much work as possible.

Beginning with the power required to run a mill of this type, it is primarily a 600-horse-power compound condensing engine. There are two cylinders, one of twenty-four by forty-eight inches and the other forty-eight by forty-eight inches; steam which goes into the initial or smaller cylinder, cut off at the half stroke, goes into the expansion cylinder, where it fills eight times the bulk it first had. Instead of going into the air, it then exhausts into a condenser which is so arranged as to counterbalance the atmospheric pressure at the altitude of Virginia City. In ways like this the ponderous machinery of the Comstock is all adapted by a host of details to suit exactly the work and the locality. The main shaft of the engine is fourteen inches in diameter, weighing fifteen thousand pounds. The fly wheel, eighteen feet across, weighs thirty-three thousand pounds. A belt from the fly wheel, which is also a band wheel, drives the stamps in the batteries. A long shaft eleven inches in diameter goes into the amalgamating room and drives the machinery of the pans and settlers. The engine itself weighs fifty tons and rests on solid masonry. There are eight boilers, each sixteen feet long and fifty-four inches in diameter, and four huge smokestacks, each ninety feet high, extending forty feet above the roof.

The progress of the ore from the ore bin, under the stamps, through the amalgamating room, to the retort house, and finally to the melting room, where the refined metal is cast into bars of bullion, would require many chapters full of technical details which properly belong to metallurgical treatises. It may be noted in passing that there is a great deal of gold in all the Comstock ore, but the quantity varies in different mines and at different levels. In the whole lode the average amount of gold is about forty-two per cent, but the Gold Hill group contains forty-seven per cent of gold in its total yield to date, and in some single mines the gold has been nearly sixty per cent.

The forty-six mining companies of the Comstock in 1866 had forty-four engines, of a total horse power of 1,500, used for pumping and hoisting, and sixty-two mills run by steam and water power, with 1,271 stamps crushing 57,112 tons of ore each month. Fifteen years later (in 1881) the total horse power of all the engines on the lode was nearly 21,000, and it has not materially increased since that time. When all the energies of the men of the Comstock are again directed to going deeper there will have to be another great advance in the machinery used, and the inventive skill of the world will be taxed to its utmost. If new and greater bonanzas are found, the mills themselves will be reconstructed upon a larger scale.

We leave the deafening clang and clatter of the mills and turn back to the main building. We have seen the progress of the ore from the top of the shaft to the retorts and the assay office. It is time to descend into the mine itself, where the iron ore cars are being filled and pushed along underground rails to the station. It is time to study life in the chain of subterranean cities of the Comstock.

CHAPTER XIX.

THE CITY UNDERGROUND.

At last we are ready to study at its best the great subterranean city, the chain of works for whose maintenance and extension, mills, machinery, and towns on the surface were created. We are ready to go down the main shaft, stop at a "station," explore a drift, see the miners at work, and hear stories of peril and adventure.

The visitor retires to a dressing room, takes off his or her ordinary clothing, puts on one of the suits kept there for the purpose—flannel pantaloons, woollen shirt, heavy shoes, and felt hat—is placed in charge of a foreman, and they enter the cage. The foreman waves his hand; in an instant we are dropping noiselessly into the darkness, lit only by the flickering rays of a lantern which shows timbers seemingly leaping upward.

Pretty soon a station appears, but we pass without pausing. There seems to be a large irregular room opening back from the side of the shaft. Men are busy there, moving about in the well-lighted space, and there is machinery at work. If we went slower we should see a drift extending from the station and dividing into many other passages, and miners and foreman would be noticed passing to and fro engaged in various occupations. Every hundred feet a station flashes past, and the immensity of the work begins to grow upon the traveller.

Sometimes the man in charge of a station hails us as we pass, and the foreman makes a reply that is Choctaw to the uninitiated, for we are dropping rapidly away from the sound. As we reach a depth of a thousand feet or so the cable sometimes begins to "spring" with a peculiarly disagreeable bobbing motion, which gives a novice a new sensation, as if hung in an abyss by a rubber strap. In the midst of this we come to a full stop at the fifteen-hundred-foot station and step off on the floor.

A station is the office for the work done on that mining level, as well as the point where men stop and where freight is shipped or received. It is walled, roofed, and floored with huge timbers and planks, and is a large, well-lighted place crowded with mining supplies, barrels of ice water, candles, fuse, powder, tools, etc. If it were not for a car track which crosses the middle of the floor, coming from the level beyond and connecting by switches with all the hoisting compartments of the shaft, the place would sometimes seem a combination of office and country store. The car track that extends through the main drift of the mine connects by turntables with the side drifts and crosscuts. Laden cars arrive regularly from the "stopes" or places where ore is being taken out, and are sent to the surface by the station tender. Empty cars as they arrive are returned to some place where they are needed by the car men, and so the work goes on steadily, excepting when shifts are changed.

The drifts, or "galleries" as some call them, are from four to six feet wide and seven to eight feet high. The miners prefer to cut them outside of the vein as much as possible, as there is less danger of caves. The floor of a drift is horizontal, or slightly raised, to facilitate the delivery of ore. The main north and south drift is the Broadway of the level, and sometimes even contains a double car track. The cross-cuts start from the main drift at right angles with the vein, so as to cut into the ore body if any is found. Like the levels, they are about a hundred feet apart. They are extended entirely across the lode to the other wall, and are connected with each other by cross-drifts. Every new cross-cut attracts the attention of all who are interested in the mine. If one cross-cut is in pay ore there is much greater excitement when the next one, a hundred feet farther on, is to be opened. In this way, with drifts, cross-cuts, and cross-drifts, the skeleton of the underground plan begins to be apparent. Imagine a general plan something like this on each level, and we only have to describe the winzes to complete the framework of the passageways. A winze is a small shaft sunk wherever it is needed, from one level to another, for ventilation, to explore new ground, or often, when sloping, to serve as a chute for ore and timbers. An "upraise" is the beginning of a winze started on a level and carried upward toward the next higher level. If it is finished its name is changed to winze. The only connection between one level and another besides the main shaft is by means of these winzes. Vertical winzes are in reality shafts; sloping winzes are inclines; drifts, cross-cuts, and cross-drifts are really tunnels.

The main shaft which connects all these underground workings is not always vertical, neither does it always remain the same for its entire length; it may be an "incline," as the Crown Point shaft, which is vertical to the eleven-hundred-foot level and then follows the lode, which dips thirty-five degrees at that point. The car used for hoisting through an incline is a "giraffe," absurdly called so "because the hind wheels are very large and the front ones low, so as to keep the car level." One would suppose that the name kangaroo would be more appropriate. It carries eight tons of ore at a trip. Sometimes another or "back-action" car is fastened behind. A ride on a giraffe is very exciting. The track is well lighted and the cars climb it with the speed of a lightning express. The giraffes, like the elevator cages, have safety grips. At the bottom of the shaft or incline is the "sump," a pit or well sunk there to collect the water from the mine. Here are the suction ends of the pumps.

To have a main shaft presupposes that there are some air shafts for ventilation; but there are few on the Comstock, ventilation being secured as far as possible by connection with the main shafts of other mines. The miners agree that the direction of a draught in a mine remains permanent for years, but if a fire in a mine changes the draught, it never changes back. A "down-cast" has thus been changed in an hour to an "up-cast." The general tendency of air currents in the Comstock is in the same direction as the slope of the ore chimneys—that is, southward. Each new connection makes changes in the air currents in all the mines.

There is machinery in the mines, and often a great deal of it. Steam makes too much heat, but compressed air, hydraulic power, and electricity are now used with entire success. Small engines run the "blowers" to force fresh air through pipes to every part of the mine, but particularly to the heads of the news cuts, drifts, and upraises; others hoist and lower rock and other materials in the various winzes, and still others drive the drills. All this makes a network of pipes, mostly for compressed air, extending throughout the mine.

The admirable system which prevails is nowhere more manifest than in the way men are handled. They form in line in the hoisting works and march into the cages. They leave the mines in the same way. Three shifts of eight hours each make the day of twenty-four hours. "Morning shift" is from 7 A. M. to 3 P. M.; "afternoon shift" from 3 to 11 P. M., and "night shift" till 7 again. Each level of the mine has therefore its three shift bosses. The clerk who acts as time-keeper has an office in the hoisting works and registers every man's ingoing and outcoming with the regularity of a machine. The shift bosses report men missing or sick, also accidents, or anything else of importance. They tally loads of ore and waste rock, filling up a printed blank. The superintendent thus knows how much work each shift has accomplished. Each level has a foreman. The mine has also a general underground foreman, and an assistant to take his place at night. As regards the workmen, there is complete classification. The timber men attend to the supports of the various workings; the miners, drill men, and drifters hew and cut passages and extract the ore; the pump men and engineers see to their respective duties. Watchmen make regular rounds, messengers carry orders, take the men water or tools, and gather up the dulled picks and crowbars to send them to the forges.

Lamps, candles, and electric lights gleam along the rocky aisles of the mines, except in long unused portions. Since one mine is connected with another on the various levels, the boundary lines being accurately marked on the walls of the main drifts, the longer streets of the underground city extend for three and four miles, and in active times men are met at almost every corner and turn, singly or in groups. It is a busy, populous city, and its inhabitants are a superb race of men, white-skinned twilight dwellers, naked except for shoes, overalls, and small felt caps. They go about quietly with hardly a word to each other. It is a land of silence as well as of candlelight. One begins to understand why miners have always made such unconquerable soldiers at times of national need; these men are soldiers already in their power to yield prompt obedience and in their capacity to move together in solid phalanxes.

On the Comstock the arch enemy is heat. "View their work!" says Mr. Lord in his history of the lode. "They enter narrow galleries where the air is scarce respirable. By the dim light of their lanterns a dingy rock surface braced by rotting props is visible. The stenches of decaying vegetable matter, hot, foul water, and human excretions intensify the effects of the heat." The men can not wear woollen garments, they perspire so freely. In the most heated parts of the mine they work ten or fifteen minutes, then run to thrust their heads under cooler water from the pipes, and to breathe deeply the fresh air forced out of the blowing tubes. They soon become so exhausted that the shift boss orders them back to lighter work in less torrid drifts. Miles of passageways have been cut in air so unendurable that candles burned blue and went out, and men falling down were dragged back by their comrades.

About 1868 it began to be noticed that the points of greatest heat in the lode moved considerably from year to year, as if the hot-water streams sometimes filled one part of the lode and sometimes another. Crown Point, on the fourteen-hundred-foot level, struck a stream so hot that eggs were readily cooked in it, but a year later the heat at this place was much lessened.

Bullion on the seventeen-hundred-foot level registered 140° Fahr. About this time an enormous vein of hot water was tapped at various points along the lode. It has been estimated that the water pumped out of the Comstock at this period and the air in circulation through the mines were together removing annually an amount of caloric that was the full equivalent of that produced by fifty-six thousand tons of the best anthracite coal, burned in the most economical manner. Notwithstanding this constant extraction of heat from the lode, the temperature continued to increase, though with many fluctuations, as greater depths were attained in the various mines.

Specialists have had a pretty quarrel over the cause of the heat in the lode. Prof. Church says: "Chemical combinations between the water and the lode rocks" —technically, kaolinization of the lode feldspar. Others say that the water in the lode rises from "where the eruptive rocks retain much of their primal heat." The highest recorded water temperature here is 175° Fahr., and large areas of rock remain at from 130° to 150°. When the miners were working on the lowest levels of the deepest shafts, three thousand feet and more from the surface, there was every sign of entering a new hot belt probably far greater than any heat previously known in the entire history of mining. By the compressed-air pipes the five or six men at a heading receive fully seven hundred cubic inches of air per minute. It reaches the place at a temperature of about 90°, seldom less. On some levels each miner drinks three or four gallons of ice water in his eight-hour shift. The hotter parts of Consolidated Virginia have required ninety-five pounds of ice daily to every miner at work. "Even with this help," said the Territorial Enterprise, "four picked men in some stopes have found themselves unable to do the work of one man in a cool drift." An incline in Savage became so tropical as it advanced that the men who were arranging the pump rod at a new station staggered out half dead with cholera-like cramps caused by the blinding heat and foul air. Men lost their wits, raved, sang, talked like lunatics, and had to be taken to a less heated part of the level, where they were rubbed and kneaded from head to foot, especially on the stomach. Sometimes it was necessary to carry them to the surface and obtain prompt medical attendance. Under these searching strains, which tried the best constitutions until the weakest place gave way, men often perished in the drifts. Besides those who yielded to heart failure, apoplexy, and suffocation, some were tortured to death by falling into pools of boiling water.

Besides this intense heat of the lower levels, the hot water met with in running drifts and crosscuts is sometimes so poisonous with the minerals it contains in solution that when a vein is tapped it blinds every miner in that part of the workings. Their faces swell and their eyes remain closed until they have been some time in the open air and under medical treatment. Then, too, the old shafts in the upper levels, long ago abandoned and marked "dangerous" on the mine maps, have been left to darkness and decay. Acres of underground passages and ore chambers here are ghastly, crumbling ruins, trembling under the step of every explorer. Timbers are twisted and crushed to half their original length or pressed together by the weight of the mountains overhead until they seem like flattened, broken, entangled straws in the "lake" of a cider press. Occasionally some one creeps along the remaining crevices into the shapeless and fast-closing chambers of ancient bonanzas. The foul and musty odours of a charnel house fill the hot, dripping, desolate darkness; moist and slimy fungi of gigantic size and strange shapes grow out of the walls and timbers; fire damp fills many of the drifts, and dangerous explosions occur; phosphorescent lights glow at times in these tangled tropical forests overthrown and crushed together, and in winter nights abandoned shafts are sometimes illuminated with dazzling blue flames that might serve for the witch scene of an opera.

The ordinary accidents which are everywhere inseparable from mining life occur on the Comstock in every possible form, only on a larger scale than usual. The character of the vein matter would be termed "extra hazardous" by every mining man. Three hundred fatal accidents and six hundred "severe injuries" were reported in the files of the Virginia City newspapers between 1863 and 1880. It is safe to estimate that from the time the mines were opened in 1859 to the summer of 1893—thirty-four years—there have been six hundred fatal and twelve hundred severe accidents on the Comstock. The years for which the statistics are most complete show inexplicable variation. Accidents seem to go by groups and seasons, and there are many superstitions respecting the subject among miners themselves.

Although not the greatest source of mining disaster, according to statistics, a fire is by far the most dreaded of all accidents. In some mines there is but a single shaft up which to escape, and smoke and explosive gases add to the dangers. There may be eight or nine hundred men compelled to take their turns to ascend the shaft in the cages; the gas explosions put out most of the lights, and men rushing to escape fall headlong into winzes and chutes. Other accidents only endanger a few men nearest the scene, but when the timbers take fire every person in the mine is in imminent danger. The slightest smell of anything burning is instantly noticed and examined into. A man could cause an excitement throughout half a dozen levels of a mine by lighting a newspaper in a candle, for the smoke would soon penetrate the drifts, and anxious miners would begin to tumble out of every nook and cranny.

The amount of lumber packed into a mine is so great and the draught in case of fire is so violent that hurricanes of flames and smoke leap through the narrow channels of rock and beat in resistless waves to the remotest opening. It can hardly be possible to overestimate the inflammability of a well-timbered Comstock mine. Where bonanzas once existed are oval chambers, one or two thousand feet high, packed full of cribs of timbers, with hundreds of floors of two- and three-inch planks on which the miners stood to work away at the roof as they rose on frame after frame from the bottom to the top of the bonanza. There are stairs, timber-lined chutes, winzes, drifts, and crosscuts, and everywhere, besides the heavy timbers, there are miles of "lagging" behind the frames. Things could not be better arranged for a conflagration.

Some glimpses of the famous fire in Yellow Jacket will serve to illustrate the subject. Here the fire began about seven o'clock one April morning in 1869 on the eight-hundred-foot level, two hundred feet from the main shaft. The morning shift was in the mine when the alarm was given, and Gold Hill and Virginia City were aroused. At the shafts of Kentuck and Crown Point, the adjacent mines, as well as in the Yellow Jacket shaft, blinding volumes of smoke prevented descent. As when a ship is in the breakers grinding to pieces against sharp rocks, those on board are sometimes as completely beyond mortal help as if they were upon another planet, so in this case the firemen and miners found it impossible to descend, not only on account of the black, thick smoke, but because of the highly mineralized and deadly gases which made men faint and dizzy yards from the mouths of the shafts.

A safety lantern was put on a cage and sent down with a message of cheer written in large letters on a piece of pasteboard: "We shall get you out soon. It is death to attempt to come up from where you are. Write a word to us." The cage descended slowly, stopping long at level after level to the lowest point at which any of the men were; it came back without any reply. A draught suddenly drew the smoke out of the Kentuck shaft, and men were able to descend in the cages; they found the bodies of two miners; the gathering of Death's harvest had begun. Crown Point could not be entered, but the smoke and gas drew away from Yellow Jacket after an hour or two, and men began to bring up the dead in that shaft, carrying them through a circle of rope extended about the hoisting works and laying them on the ground.

Firemen took hose, and carried it down the shaft to the eight-hundred-foot level; miners and timber men went with them, putting out flames, propping up falling walls and sides of drifts half filled in places with *débris* from the roofs. Such a battle in the recesses of a mine equals, and indeed surpasses, in elements of danger and heroism the fiercest fire battle that men ever waged on the surface of the earth. They played streams of water all day upon red-hot rock and into boiling lakes, and the water ran at scalding heat from the giant pumps. Sudden caves drove poisonous gases upon them; they were paralyzed by fumes of sulphur, antimony, and other minerals, and were sent up the still smoking shaft, whose heavy timbers fortunately had not been destroyed.

After thirty hours of continuous labour the firemen and miners recovered twenty-three bodies. The fire broke out again and again, with new jets of deadly gas; it became evident that no life remained in the ruins, and at last, after several days and nights of unavailing struggle in the three mines, the mouths of the shafts were hermetically sealed and steam was forced into them with all the force of the giant engines. Two days later the shafts were opened and more bodies found, but the fire broke out, and the mines were again sealed. This alternation continued several times, for the whole mining community was determined to recover every body; but the firemen were brought up insensible, even seventy-five days after the first outbreak of the fire. The miners at last walled up the smouldering fire on the eight-hundred-foot levels of Kentuck and Crown Point, where it continued to burn for a year or more. It is a well-authenticated fact that three years afterward there was still red-hot rock in some of these drifts.

The scenes that occurred in the mine when the fire broke out were graphically told in the Territorial Enterprise and other newspapers, whose reporters interviewed every man who escaped in the first cage load before smoke and gas had filled the shaft. The story reads like a leaf from the destruction of Pompeii—darkness, smoke, ashes, rains of fire, fatal vapours asphyxiating the panic-stricken people of the submontanic city. The Crown Point miners crowded in the cage, where they hung to every bar in such wild confusion that the station keeper thought many of them would be torn to pieces, and so held the cage until it had only time to escape, remaining behind himself and losing his life. One miner, hastening toward the shaft in the total darkness, all lights having been put out by gas explosions, dropped on his knees and began to crawl forward till he was at the edge of the shaft. Several other miners ran up from behind, and he heard them fall headlong into the deeps.

Outside, the scenes that occurred as bodies were brought out of the volcano mouth, and, most of all, when the order to seal the shafts was given, were such as abide in one's memory for a lifetime. Wives, children, fathers, mothers, friends of the doomed men were all there, adding their separate passions to the awful grief and despair. Some wept, some wrung their hands and cried aloud, some appeared as if suddenly insane or stupefied and overwhelmed by the calamity. Now and then a woman fainted and was carried home by her friends, and ever the crowd grew as the more remote cottages of the miners poured forth wild women hurrying from washtubs and housework to where the black smoke rolled forth, a sign to the cities of the lode that precious human lives were being lost in that vast dædalian labyrinth a thousand feet below. As each body was carried out, a wailing cry rang through the crowd like the winter wind in Sierra pines: "Who is it?" "Who is it this time?" Then the wives of the missing miners came forward to look, and some one shrieked recognition, and those that carried the dead sobbed as they turned back for another.

Later there were other fires. Explosions shook the solid earth and hurled sheets of flame two thousand feet along the drifts from mine to mine. Scorched bodies were found beside the fire track, but miners in the cross-cuts escaped. Again, some months afterward, the Belcher air shaft caught fire. The men were got out of the mine, but gas explosions that were heard

The Bottom of a Shaft.

a mile off and spurts of flame five hundred feet high warned the superintendent that the drifts must be closed or the whole mine would soon be a mass of flames. He called for eighteen unmarried volunteers for a desperate undertaking, and had great difficulty in choosing among those that came forward. They were hastily bulkheading the main drift near the burning shaft when a large cave in the latter changed the direction of the draught, and instantly a breaker of white flame rolled forward through the drift. Nine of the eighteen men "were hoisted out scarred and crisp, their clothes burned from their bodies." A second gang of volunteers took the place of the first and completed the bulkhead.

A remarkable struggle for life occurred in the Succor mine, a little off the Comstock, on the Silver City grade. Some miners who wished to "thaw out" their frozen giant powder put a dozen cartridges on the engine boilers and went away. Pretty soon the cartridges began to burn, throwing out jets of flame that rose to the woodwork, and so the hoisting works blazed up in a moment. The mine was a small one, and little work was being done at the time; two men were down in the shaft, five hundred feet below, and the hoisting tub was there also. The car man and engineer shouted to the men and shook the cable, but failed to make them understand that they were in great peril. Then the fire drove everybody out of the building. It was soon in flames and fell in, and the timbers of the shaft itself began to ignite. Of course every one knew that there was no hope after that for the men below, who could not escape suffocation. But two days later, when the fire was put out and a gang of miners went down, they found the bodies of the two men "at the pump station," a recess in the side of the shaft. They had actually climbed two hundred and sixty-five feet by clinging like snails to the corner timbers and slight crevices. Foot by foot their marvellous journey was traced, and it still remains an unequalled feat in the annals of mining. They were in perfect safety in the sheltered alcove until the poisonous gas from the burning pine rose to that point and destroyed them. A polite coroner's jury a few days later said: "We must strongly deprecate the custom prevalent in many mines of warming giant powder on the boilers about the works."

The spirit in which the miners meet peril and death is almost uniformly the cool, careless fatalism of many a war veteran. Some of their grim jests still ring like the sayings of old Norse sea kings. A premature blast in one of the mines once drove a foot-long splinter through the hand of a timber man, through the lagging he was working on, and into the soft rock. "We shan't need a spragg at this end, Bill!" was his cool remark. A "spragg," be it understood, is a square stick of wood six or eight inches long. One end is put against the posts of the timbering; the other end, slightly sharpened, is against the heavy planks, called lagging. The pressure of the walls upon the planks gradually forces them out, and the spraggs go steadily through into the rock behind. When the planks reach the post the men in charge take picks, relieve the pressure, and put in new spraggs. This system keeps the main timbers from being broken.

A still more famous case of nerve was furnished by a brawny young Cornishman who fell into a main shaft. Twenty feet down he came to the pump station out of which the old-style pump "bob-nose" projected a little, and by agility, strength, and good fortune he was enabled to seize it with both hands, and so hung over the shaft, swinging from the slippery iron. He made no outcry, knowing that he had been seen to fall and that men would look down the shaft. When a bucket was lowered and he was brought up he cast a careless glance over his shoulder as he walked off and said: "If ee ha'nt caught hold of the bob ee'd ha' been scattered all abroad by now!"

We have thus studied the toils and adventures of the citizens of the real Comstock, the men of shafts, drifts, winzes, and ore chambers. This strange hidden realm begins to take shape in one's mind. It is truly a city, but it is not like the cities of the surface, nor can it be even measurably described by the terms and phrases that apply to such cities. If the California and Consolidated Virginia mines could be taken out of the great lode and set on a plain, they would cover a parallelogram thirteen hundred and ten feet one way and about three thousand feet the other. The height to which they would rise would be over three thousand feet. Through the mass around and within it one would see so many galleries and pathways that to remove the whole body of material piecemeal would seem easier than to construct a tithe of them. Everywhere there are angles, curves, and irregularities, as veins of ore have been followed. Everywhere the mass of soft, mineralized matter mingled with hardest rock is bored, patched together, upheld by braces, and kept from instant collapse. These mines, moreover, are only two out of many. The whole lode, if plucked forth by the roots, would present similar characteristics, and, more than this, it would lean like the Pisan tower, and the sides would run in and out like a toppling, wave-worn cliff full of coves and promontories.

But the Comstock seems to me a more impressive fact just as it stands, walled in by mountains and rooted so deep that men may toil there through centuries to come without reaching the bottom of its "fissure vein." After meditating upon the paths, lanes, alleys, roads, crossroads, and highways of the great group of mines, rising by stairs on stairs, from level to level, one is ready to grasp the completed conception of the labyrinthian wilderness, where, in the midst of abandoned acres of caves, pitfalls, and jungles of fungi-overgrown timbers, lie masses of ore and yet-undiscovered bonanzas.

Imagine, then, a city built by fallen angels or by the jinn and genii of Arabian legend. They have riven the Himalayas, the roof-ridge of the world, and in the vast cleft they have builded with stones and metals, cell by cell, as the honeybee builds. Millions of years the dwellers have toiled until the cleft, from palm-land levels to where deodars grow in the edges of snow drifts, is full and running over. At last the kingdom of the genii is overthrown by some superhuman hero. Wrathfully, then, the defeated ones rain fire and molten rock down the Himalayan cleft, pile mountains overhead, and pass, black-winged, out of sight forever! Still, traditions of the wondrous city live on in singers' tales, mingled with stories of heroes and the gods in their high places; still, men's imaginations cling to the legend. Then, in the fulness of time, treasure-seekers come, tracking up a barren cañon the faint spatter of molten drops blown from towers of gold in the wondrous city's conflagration. They tunnel into the cleft, they sink shafts into measureless depths, still molten with rains of fire, until they find and empty the palace rooms of the princes and monarchs of a race that existed before the generations of men.

CHAPTER XX.

THE MINING COMMUNITY.

GREATER than the city are the dwellers therein; finer than all incidents and illustrations of the magnitude and material wealth of the Comstock, are lessons of human faith, courage, and ability to conquer every obstacle, that are taught by the story of the mines. For a period of time as long as an average life the famous group has been training men to be miners; has been creating specialized types of character in the midst of a peculiarly courageous and intelligent community.

Along the Comstock, year after year, the bonds of common interest and sectional pride drew men closer together in spite of strenuous rivalries. Periods of bonanza replaced pioneer cabins with edifices of brick and stone, terraced upon the hillsides. Periods of borrasca welded social ties among those whose fortunes were inseparable from that of the Comstock, even as a trip hammer unites steel blooms into armour-plates for girding iron leviathans of war. Men, women, and children learned to love the keen excitements, the splendid physical activities, the perpetual outpourings of energy, the virile, superb, passionate life of the mining camp.

Everywhere, almost unheeded, in the bustling, restless community, were the hidden elements of literature, but, strangely enough, no world-famous tale of the Comstock has yet sprung from the fertile soil. Here and there a few Californians have attempted to picture the changing life of early Nevada before it passed away, and brilliant local writers have photographed episodes and single characters. But no great novelist seems to have recognised the preciousness of the fast-passing opportunity. Some day the story-teller will come who can add another masterpiece to literature, as one long dead but not forgotten once went to a crumbling adobe house and a poor, despised race, and there wrote Ramona.

Said a man who knew and loved the Comstocker: "The person who only judges from the exterior has no business in the camp. He will be picked up a little too often for pleasure if not set down a little too heavily for comfort. A man can have any game he wants, whether played with a pack of cards or with pistols, whether straight from the shoulder, or in kindness from the heart." Dr. Gally can also be called as witness to the characteristics of the men of these and other mountain camps: "They are not good people in the Sunday-school view, but there is a spirit of charity and a Saxon sense of fair play about them which is a substitute. A deliberate insult to a woman or a child is a bid for instant death, and the general verdict is, 'Served him right!' But no man here is any other able-bodied person's guardian. Whoever wishes to go to the dogs, goes to the dogs. There is no restraint, or, as they express it, 'There is nobody holding you.'"

Mining camps, large and small, openly wear their worst side out. Whatever vice exists is open to the sun. With much that is evil, there is also much that is noble, and even heroic. Meanness is very scarce, and shams of any sort are instantly punctured. "What do you know?" is a common morning salutation, and "What can you do?" expresses the habitual attitude of the camp toward every stranger. Everywhere among this great and peculiar race of men one finds a graphic, broadly humorous, or quaintly burlesque use of words; never in any part of the world has language been more perfectly fitted to daily needs. Here are grotesque idioms and ancient yet living dialects; here, also, is Shakespeare's English, new-minted by the men of the camp into homely phrases that have become American. The frontiersman is here, but the backwoodsman has been eliminated. One notices with surprise that these men, and in fact all others in the camp, seem endowed with an undismayed spirit of humorous buoyancy, curiously common here to all temperaments, climatic, consonant with the clearness, dryness, and purity of the atmosphere, and yet so individualized as to be full of a rare and inexpressible charm.

As for the workers in and about the mines, the minutely classified body of men that form the real nucleus of the camp and give it these distinctive features, no other group of men in America are more compactly organized, none show a keener intelligence, and none are deeper-chested, stronger-limbed mountaineers. Their abounding vitality and cool, steady courage (in the mining-camp term, "sand") have received abundant illustration in the preceding pages, but nothing has been said of their love and tenderness for each other in times of need. Men become "pards," and each one lives for the other, willing to die for him if there is a chance, and that may come at any moment. They take care of the sick with the gentleness and patience of trained hospital nurses. It is a heroic fellowship at its best—the social order of this masterful, masculine community.

The underground miner as he goes about the street is a well-dressed, clean person, who takes a daily bath and changes his clothing twice a day —once when his shift goes on, and once when it comes off. He is calmly proud of his occupation, in the purely professional spirit, but personally he is as modest a man as one could wish to see; it is not at all his fault that he is in his way an aristocrat among working men. His life has made him a sane, thoughtful, responsible person as far as mining goes, no matter how lawless of social conventions he may choose to be in other directions. He knows himself responsible for the lives of his fellow-workmen; his own life hangs upon the honesty of another's work, and that other's life hangs upon the honesty of his own work. A single careless prop, a defective bolt or timber, any neglect or lack of thoroughness, any laziness or ignorance, is sure to bring calamity, and may bring death. Therefore this responsible professional personage is as stern as Rhadamanthus in his judgments upon all that pertains to his business.

No incompetent foreman can govern such men. In a great fire at Crown Point, Senator John P. Jones, then superintendent, found it necessary to cut a pipe on the seven-hundred-foot level. It was midnight, and almost continuously for five days and nights he had been foremost in leading the dripping firemen and half-naked miners through smoking, flaming, steaming drifts. Jones and a young man went alone into the level to drive a plate of steel through the pipe. They worked for fifteen minutes in an atmosphere so deadly that the lights almost failed them, and the miner could hardly hold the plate. The lights went out as the last stroke fell, and Jones carried his fainting, half-delirious assistant to the main shaft and held him during the ascent. When the hoisting room was reached he dropped his burden on the floor and staggered blindly to a bunk. Such were the leaders of the Comstock miners.

One can hardly understand the curious ebb and flow of mining life in its mingling of admirable reserve with dangerous turbulence without long meditation upon that troglodytic existence often so singularly barren of colour and variety, and yet so inexorable in its demands upon heart, hand, and brain. Men might toil with dull persistency for months in a dark, dripping vault, picking down a wall and wheeling out rock; one twist of the pick might fill the drift with a foaming, resistless river of water. The divine elements of mystery and passion were forever hovering near them. Thus miners become, in the course of years of toil, magnificent examples of the power of such environment to stimulate the emotions and intellects of labourers, and to produce a people with vast capacities for love and hate, for sarcasm and laughter, for terrible wrath and for sublime self-sacrifice.

From the most ancient times, says Gamboa, the toils of the mine have been a punishment for slaves, a torment for martyrs, a means of revenge for tyrants. The Belgians purposely called the mining shaft "*la fosse*," the grave, and the Cornish pits were named "coffins." This dreary and exhausting employment makes men long for amusement; they become reckless and yield to the strong and coarse temptations of mining towns. The staples of leisure-hour existence mean to thousands deep drinking and high gaming. The vast fortunes made and lost in mining stocks, and the fluctuations in real values of the mines themselves, insensibly warp the judgment and make the whole community restless, eager, ever anxious for sudden gains. A leading Comstock mine owner once said that he "did not mind what wages he paid his men."

for "all the surplus" came back to him in his stock deals.

The simple, childlike men of the mining camps were quickly stirred for good or evil. During the war the "sanitary flour sack" of Nevada became historic. It began its career in an outside camp where an election bet was made that the loser should carry a fifty-pound sack of flour through the town and donate it to the Sanitary Commission. Gridley, to whom this fate befel, put the sack up at auction, and $4,539 in gold was realized. He then took it and started, in May, 1864, on a tour of the Pacific coast. When the famous sack reached the Comstock, Mark Twain and Tom Fitch made speeches, and the towns on the lode took a holiday. Gridley, covered with flags, the sack of flour on his shoulder, walked through the streets, escorted by brass bands, military companies, carriages, horsemen, and the multitude. Silver City invested $1,800. Gold Hill poured out $6,587, and when Gridley reached Virginia City and mounted the platform with his wondrous sack the miners were determined to "play the game for all it was worth." The Chollar miners, through their spokesman, offered $500; Potosi miners raised them, and so it rose by hundred-dollar leaps, as group after group entered the contest, till the Gould and Curry miners, to use their own phrase, "lifted the rest of the boys out of their boots" by paying $3,500 in cash. Coin rattled like hail on the platform until nearly $14,000 was raised. Men climbed over chairs and emptied their pockets before Gridley. According to the Territorial Enterprise, a "small brown bug" crawling on a man's arm was caught, put up at auction, and sold for ten dollars for the Sanitary Fund, as a sort of side-show, while Gridley was still auctioning off his flour. A person who jeered irreverently at the bug, and also suggested that the money "had better be given straight," was immediately thrashed by an irate miner.

Nothing in the long story of the Comstock surpassed the outburst of delight that took place upon the surrender of Lee. The people "went wild in a frenzy of emotion." Said one of the newspapers: "No such drinking was ever before seen anywhere. In three hours the majority of the men of the city were crazy drunk, including many who were never before under the influence of liquor, and were to be seen lying in heaps. Business was entirely suspended, and the printers, editors, and reporters being all drunk, no papers were issued." Mark Twain himself could not invent a more unique, plausible, and all-sufficient editorial excuse for not coming out on time. Rabelais in all his madcap revels never depicted such "high old times" as Virginia City saw that day. Men left the saloons and walked the streets, drinking the healths of the war heroes and of the war President until the last reveller sank into maudlin sleep. A few days later came the news of the assassination of Lincoln. Then the men of the Comstock wept like children and draped their houses and stores in black. Seizing a man who muttered approval of the deed, they gave him thirty lashes on the bare back, and were with great difficulty restrained from hanging him.

Newspapers were very numerous in the Nevada mining camps. Scores of brilliant and audacious writers entered the new fields with able publications whose scattered files will always remain the best contemporary record, and often the only one, of many a forgotten district long since abandoned to primeval silence. The support that these journals received was surprisingly liberal, and while the camps were prosperous they were bonanzas to their fortunate owners. Before the Big Bonanza was exhausted more than a hundred different newspapers had been started in the scattered towns of Nevada, whose population was only sixty thousand people. "Along the shore where these dismantled journals were driven by adverse winds," writes one of the pioneer editors, "are buried many absurd, strange, wonderful, and often tragic experiences." A few, a very few, of the old-time editors survive, in a world as remote from their thoughts and training as the thickly settled, railroad-gridironed Sacramento Valley is remote from one of the white-haired trappers of Siskiyou. Some of them, winning a wider fame, left the Comstock, or Reese River, or White Pine, decades ago; others, tired of the "festive pistol's popping" and "a man for breakfast every morning," have learned to plant orchards and vineyards in the California valleys, and so lengthened their days after the long service of pioneer journalism.

Hard and ceaseless that service was. Into every new camp some wandering editor-printer went with his press, types, and outfit, was noisily welcomed by the miners, turned his mule loose on the hillside, and began to pencil his announcement for the first issue of the Prospect, Miner, Argent, Silver State, True Fissure, Reveille, Messenger, or whatever he chose to call the new venture. The Silver Bend Reporter, started in such a manner, in 1867, at a frontier mining village in a rocky cañon of Nye County, announced its advent in language that was there considered a model of the dignified style of salutatory: "Here, in this bright offshoot of civilization, surrounded by a vast ocean of wilderness, shall be a newspaper! In young, vigorous, and beautiful Belmont we have settled." The Territorial Enterprise, the pioneer newspaper of the region, had five men on the editorial staff and twenty-two compositors. Five hundred dollars a month was the salary of the managing editor. Mark Twain and Dan De Quille were reporters. About this time Tom Fitch, of the Union, challenged Joe Goodman, of the Enterprise, to a duel in Six-Mile Cañon. Mark Twain recorded his disappointment in the next issue: "Young Wilson and ourselves at once mounted a couple of fast horses and followed in their wake at the rate of a mile a minute, since when, being neither iron-clad nor half-soled, we enjoy more real comfort in standing up than in sitting down. But we lost our bloody item, for Marshall Perry arrived early with a detachment of constables, and Deputy-Sheriff Blodgett came with a lot of blarsted sub-sheriffs, and these miserable, meddling whelps arrested the whole party and marched them back to town."

Columns of this sort of thing could be culled from the pioneer newspapers of the Comstock in the days of their glory, when their laughing and fighting writers were the most virile, rollicking, merciless, tender-hearted quill-drivers in America. R. M. Daggett, Henry Mighels, of Carson, Myron Angel, J. T. Goodman, and D. E. McCarthy were among the most famous Nevada editors of the period, and nearly all of them belong to the Comstock group of newspapers, where they first exhibited their high literary abilities. A little later, while these veterans were still in harness and a younger group of writers—such as Sam Davis and Arthur McEwen—were becoming known, the press of Nevada contained more real Pacific-coast literature and gave its writers more freedom of expression than did the newspapers of California and Oregon put together.

A pioneer newspaper office early in the '60's is described as a rickety one-story frame building about twenty feet wide. It contained an old-style Washington press, cases, desks, and editor's table. A small lean-to addition was the kitchen and dining room, and sleeping-bunks like those in a ship's forecastle occupied one side. On cold winter nights the stove was made red-hot, and the printers moved as close to it as possible and "lashed old sacks around their feet with bale rope" to keep themselves warm. When it rained the roof leaked, and the dripping water was led over the cases by strings, so many of which filled the upper part of the roof that it looked as if hung with "webs of Brobdingnagian spiders." Every one, down to the printer's devil, had shares in some favourite mine, and boxes full of specimens lay around in the corners. When a prospector from the desert entered the office, editors and printers dropped their work and gathered around him to listen and ask questions. Many of these pioneer newspaper men had done more or less prospecting themselves.

Stories about Mark Twain, whose brother was Territorial Secretary, are countless in Nevada. He came to Virginia City from another camp, where he had been writing letters signed "Josh." When the first steam press in Nevada started in the Enterprise office, the "general mix-up of new press, newspaper, and bottles of wine" caused Twain to take among other things what he averred was "a severe cold on his mind." He staid at home and one of his chums took his place at the local desk. The next morning the paper contained an article purporting to come from Mark Twain, in which he was made to make an abject and circumstantial apology to a large number of Virginia City newspaper men and other citizens whom he had at various times criticised. This document instantly cured the "cold on the mind," and Twain, resuming his editorial chair, described its late incumbent as "a reptile endowed with no more intellect, no more cultivation, no more Christian principle than animates and adorns the sportive Jackass rabbit of the Sierras!"

But it was as legislative reporter that Clemens became a shining light of the times. Besides his sober, everyday Senate and Assembly items, he concocted a Third House report which pelted the Legislature with incessant sarcasm. Member after member was made to air his views in a grandiose burlesque of his favourite expressions. After an excellent parody upon Senator Stewart's famous speech against taxing the mines, the president of this mythical Third House responded:

"Take your seat, Bill Stewart! I am not going to sit here and listen to that same old song over and over again. I have been reporting and reporting that infernal speech for the last thirty days, and I want you to understand that you can't play it off any longer. When I want it I will repeat it myself—I know it by heart, anyhow. You and your bed-rock tunnels and your blighted miners' blasted hopes have got to be a sort of nightmare to me, and I won't put up with it any longer."

Thus the humorist dealt undismayed with each individual idiosyncrasy of the legislators, and made them ridiculous throughout the length and breadth of Nevada. When poor Larrowe, of Reese River, returned to his constituency he was everywhere greeted with admiring quotations from the Proceedings of the Third House, such as "Nine sceptred and anointed quartz mills, sir, in Lander County already!" and the terse presidential comment: "Plant yourself, sir! plant yourself! I don't want any more yowling."

Leaving the newspapers, let us again turn to the mining class. The statistics for 1880 are typical of the working force at a time when it was larger and better organized than at present. At that time there were 2,770 miners employed, of which 770 were Americans, 816 were Irish, 640 were English, 191 were Canadians, 83 were Scotch, and the rest were "from everywhere." Welsh, Swiss, Swedes, Slavonians, Danes, Belgians, French, Australians, Manxmen, Norwegians, Portuguese, and Russians were represented. There was one Finlander and one Laplander. Six more men were married than unmarried. The average age was a fraction over thirty-six; the average height was five feet nine and one fifth inches; the average weight was very close to one hundred and sixty-six pounds. Classified, lastly, according to employment, in thirty-nine distinct occupations in and around the mines, the Americans furnished a majority of the foremen, bosses, engineers, firemen, carpenters, blacksmiths, and machinists. Both the Irish and the English furnished more miners in the technical sense than the Americans did. About eight hundred men in all were needed in the small but important occupations, such as masons, melters, pump men, brakemen, lamp men, and a dozen others; nearly two thousand were miners in the full meaning of the term.

The organizations by which the Comstock miners have maintained wages, have ruled in this respect under all administrations, and still continue to rule, are simply "Unions." At Virginia City, Gold Hill, and Silver City their word long ago became law. On one occasion a superintendent who had attempted to cut wages was concealed in the home of a priest, or he would have been torn limb from limb by the indignant miners. No Chinaman was allowed in the mines under any pretext. As time passed these remarkable Unions, which had dictated to Stewart and his allies in the days of the earlier bonanzas, reached out to greater victories. When Sharon and the Bank of California syndicate began to build a railroad to Virginia City it was decided to use Chinese labour in grading.

Sharon controlled nearly everything, from the newspapers to the Legislature; but no sooner were his Chinese graders established in a camp near the Overman mine than a committee of three hundred and fifty-nine miners from the Union went out, four abreast, like a military company, in two battalions, and descended on the Chinese. The sheriff of the county ordered them to disperse and return home. One man replied that they would do so as soon as they were through, and advised the official to sit down and watch proceedings. He halted them and read the Riot Act, to which they listened with grave attention until he had finished that impressive document. Then they roared sealike applause, gave three cheers for the "United States of America," and marched on with loud Homeric laughter. As they went along the course of the railroad construction the Chinese deserted pick and shovel and fled into the gulches. Not a shot was fired. The "Committee" returned to report progress, and for eight days not a Chinaman dared to do a stroke of work, while the lordly Sharon was supplicating the Unions to permit the resumption of railroad grading. Finally he signed an agreement by which he removed the Chinese from the districts of Virginia City and Gold Hill.

The wage standard that the Unions insisted upon was not less than four dollars a day for eight hours labour. All workers in the mines, skilled and unskilled, were put on the same arbitrary level. Their one reply to every argument that if cheaper labourers were employed in handling low-grade ores, more men could be given employment at the higher rates, has been the curt statement, "Pay four dollars a day or shut down the mines."

Four dollars a day was not unusual in the mines of the Pacific coast at the time of the discovery of the Comstock. When the cost of obtaining supplies is taken into consideration, four dollars left the labourer less surplus than two dollars in field work in the accessible valleys of California. As the Comstock lode was developed, only the best miners were employed, and others went to newer districts, thus keeping down the supply. The bonanzas were discovered at such intervals as to give the best mines a large margin of profit, even when paying such wages, and the stockholders, always anxious for immediate returns, were never willing to shut down the mines long enough to secure a new body of working men, even if they could thus break up the Unions and greatly reduce the running expenses of the mines. Indeed, there never was any united effort to reduce wages, so violent and immediate was the revolt against the slightest move in that direction, so strongly were the Unions supported by the whole community. Besides, in many if not all cases the temporary closing of a mine meant the flooding of it with water, and perhaps years of costly efforts to pump it dry again. The Unions held an impregnable fortress.

If there had been no stock market, and if careful business men had been owners of the mines and had held their shares as an investment first, last, and always, no miners' Union or mining community could have prevented readjustment of the amount and the distribution of the wage fund. The Comstock plan, which paid the poorest and the best miners by the same scale of compensation, would have given place to a sliding scale fixed by the employers according to their ideas of the labour market. The artificial standards of the Union were only made possible by the unique financial history of the great lode; by the millions of dollars in unproductive assessments collected from eager men and women of every rank in life throughout the Pacific-coast States and Territories; by the splendid succession of bonanzas which created in turn the fictitious paper bonanzas of the stock markets; and, lastly, by the great money kings, Stewart, Jones, Sharon, Ralston, Hayward, and the Bonanza Four.

Every observer of the Comstock in its palmy days noted the universally high standards of living. Not only the necessaries, but the luxuries of life formed the daily fare of the miners. California and the adjacent valleys sent the choicest fruits, berries, vegetables, milk, fresh butter, and stall-fed beef. Trout, venison, bear, squirrels, quail, and grouse from the Sierras, salmon from the Sacramento, ducks, geese, snipe, and other wild fowl from the sloughs and bays, and oysters from the Chesapeake, were everyday affairs in the Virginia City markets. In 1876 the railroad carried to the two towns in round numbers 400,000 pounds of fish, 350,000 pounds of poultry, 120,000 pounds of oysters, 1,020,000 pounds of eggs, 1,000,000 pounds of vegetables, and over 2,700,000 pounds of fresh fruit. Hams of the best grade to be obtained were a favourite article of food, and nearly 600,000 pounds were used. It is hardly necessary to continue the list. No labourers ever lived on better fare.

The clothing worn by the miners at home and in the streets was substantial and often elegant. Their underwear, white shirts, and shoes were of the grade preferred by the average storekeeper or landowner. The unmarried miners lived in large, well-kept lodging houses, the rooms of which were carpeted, heated, and comfortable. Bathrooms were universal, not only in the lodging houses but at the hoisting buildings. Board and lodging which cost forty or forty-five dollars per month in bonanza times has been reduced by 1880 to thirty dollars, and even less.

Pay day on the Comstock comes weekly in some classes of work, and the habit of squaring accounts on Monday has grown up among merchants, so that Monday is still called "steamer day," a phrase borrowed from pioneer San Francisco. The regular pay day of the working miners is usually from the first to the third of every month. The men, as they come up out of the mine, go to the timekeeper's office and get their accounts. Then they go to another office, where the cashier or head clerk pays them. In the best Comstock times Consolidated Virginia's monthly pay roll was ninety thousand dollars, and three quarters of a million dollars was paid along the Comstock every month to the employees of the mines. Four dollars a day for workmen counts up fast, and, besides, the engineers, machinists, and a few others received five, six, and even seven dollars a day. The railroad men, the mill men along the Carson River, and the lumberers in the mountains all receive their wages in much the same way as the miners do, and the cities on the lode receive the most of it back again. In many cases every man in a mine leaves a dollar or two with the cashier, when he draws his pay, for the family of some dead comrade; in this way as much as two thousand dollars is sometimes raised in five or six months. This is the miners' life-insurance system.

Chosen as the miners are—the very pick of the mining population of the Pacific slope—they are young and vigorous, but, as vital statistics show, they suffer from pulmonary troubles. This is due to the sudden change from the tropic lower levels of the mine to the snow-covered, windy ridge of the town in winter. "Many a man," says Mr. Lord, "reached his house half-choked with pneumonia, and spitting blood." The introduction of warm dressing- and waiting-rooms at the hoisting works lessened disease, though the vitality of the miners continued to be sapped by their excessive use of stimulants. Long after the big bonanza days the average annual consumption of beer on the Comstock was fifteen gallons apiece for every resident of the county, and that of spirituous liquors was five gallons. The twenty thousand people spent annually about nine hundred thousand dollars for beer, wine, and ardent drinks. This was called by the saloon men "a dry season," however, for they had seen the average annual consumption of all classes of liquors nearly three times as much.

The remarkable efficiency of the well-fed, well-clothed, and contented miners of the Comstock has been noted in previous chapters. There are no better miners known to the craft, nor can any nationality be said to excel. Working groups are usually made up of men of several nations, for they accomplish more in this manner. In 1877, in the California mine, 217,432 tons of ore were extracted and milled. This, it has been estimated, was a daily average of 1.13 ton for each man employed. The report of the company gave the expenses of that year as follows: Hoisting ore, $186,461; supplies, $357,101; salaries and wages, $788,012—giving a total of $1,331,574. The 217,432 tons of ore brought up was lifted 1,600 feet and cost at the surface $6.12 per ton. Mining authorities say that this entire record is without parallel for cheapness and efficiency under the given conditions.

Never were the self-reliance and sheer fighting capacity of the men of the Comstock better shown than during and just after the great fire of October, 1875. It began at six o'clock in the morning in a low lodging house kept by a woman called "Crazy Kate." Scores of cheap frame buildings surrounded it, everything was like tinder, and a fierce gale was blowing. People roused from sleep had barely time to escape with their lives. The hoisting works lifted men out of the depths as fast as possible, and miners and firemen fought the flames. Vain task! The wind hurled fiery missiles across the city, kindling fresh centres of destruction, while the main torrent rolled on like a lava river from Kilauea, hemming in the defeated toilers. Great brick buildings tumbled, as in the Boston and Chicago fires. The populace, yielding to despair, fled to the mountains and there looked down from barren rocks upon the destruction of Virginia City. Out of the ocean of fire came the roar of explosives as whole masses of buildings were blown to pieces by gunpowder and dynamite stored within, or were blasted out of the way by the heroic men, still fighting as they retreated. Pillars of flame and the mass of dark smoke were seen fifteen miles away. The business houses, public buildings, hotels, banks, churches, freight and passenger depots, and many private residences were in flames when the whole fighting force was centred on the costly mine works. The mountains shook with blasts of dynamite, clearing open spaces about mills and hoisting works, but the fire leaped over in a hundred places at once, caught lumber yards and shaft houses, and swept nearly all the surface works of the mines out of existence in a few moments. Millions of feet of lumber, thousands of cords of wood, trestles, offices, roofs, machinery, inflammable supplies of every description, threw out such heat that a pile of railroad car-wheels in the open air in the Ophir yards were smelted together. The fire began to creep down the great shafts, and here the miners and firemen struggled in the midst of blazing ruins until the mines themselves and the joint shaft buildings of California and Consolidated Virginia were saved.

About two thousand buildings were destroyed on the lode, and ten million dollars would hardly have replaced the loss. Car loads of cooked provisions, blankets, and other supplies were started toward the Comstock while the fire was still burning. Money was telegraphed. Relief committees were organized in other towns and cities. Lumber was placed on the smoking earth, still being wet by firemen. Electric lights enabled the work of rebuilding to go on by night as well as by day. In sixty days the people of Virginia City were again settled comfortably. An extract from the official report made by the superintendent of Ophir will serve to show the stuff that men were made of in old Comstock days: "On the day after the fire men were sent to Carson and Dutch Flat, California, to procure and ship timbers; machinery was telegraphed for. The new double-reel hoisting engine just completed for the combination shaft of the Chollar-Potosi, Hale and Norcross, and Savage was secured; the old engine foundations were torn out and new ones constructed; work was prosecuted without cessation; supplies hauled a considerable distance on account of the destruction of the railroad tunnel and bridges; the works rebuilt and hoisting through the shaft resumed November 25th, being inside of thirty days from the time of destruction." The new buildings cost nearly $318,000. Consolidated Virginia and California, which had lost $1,461,000 by the fire, replaced everything that was destroyed within fifty days, and yet declared without delay their regular dividends. Consolidated Virginia paid out over two million dollars while rebuilding its works, for it was in bonanza. These were extraordinary and indeed unprecedented feats of labour and capital. The city of mines had come out gloriously under the fire test.

Such were the workmen, such the communities, that once clustered in the rocky waste on the mountains of Nevada. They are still the same, though since the Big Bonanza was worked out the mines have paid their owners poorly, and the towns have suffered much more than in any former period of borrasca. Small stockholders no longer carry the burden of assessments as formerly, but a few large owners have been forced to prop up the fallen market and sustain by their own wealth the daring and still alluring speculation. None except themselves can say how many more millions of dollars these men will or can spend in the search. What new problems are to be solved in deeps below deeps, what magnificent metalliferous deposits may rest undiscovered in the great fissure, no human prophecy can foretell.

CHAPTER XXI.

THE COMSTOCK AS IT IS.

THUS far, the story has been a straightforward narrative of events, from the days of the trappers to the exhaustion of the Big Bonanza. Those Titans whose plots and counterplots shook half a continent are dead, or have forever left the Comstock. We have fallen upon dark and narrow times, and yet, like a ship long beating up some iron coast against unfriendly winds, each headland we round may prove to be the last cape that shuts us out from another prosperous voyage. The spirit of the true mining men was never so clearly present as it has been through the lesser episodes of these sixteen weary years of the Silence of the Comstock.

"She has another word to say. She is asleep, but not dead." Thus spoke incarnate poetry to me from the lips of one of the ancients as I stood on a gray waste pile, looking out over the barren land. The story ends with a question—"What next?" Is it to become a land without a habitation, a mountain of ruins like the ancient city forts of those unrecorded miners of Mashonaland and the Golden Chersonese?

If thus it was now ended, how very far from a new story it is when all is told. Nothing among the deeds of gold-hungry men and wandering races of conquerors could be less strange than this, and yet it covers so large a space as to become almost an epic. Over and over again, great busy camps, becoming strangely silent, have perished as frosted leaves. The cities the miner has built—who shall name or number them? They are hidden in trackless deserts, luring generations of prospectors to their deaths; they lie among Andes and Himalayas, under glaciers, in tangled Cambodian forests, or, deeper still, where lost continents are sunk in ocean's dreamless ooze. Not yet has that hour of doom and oblivion arrived for the proud Comstock, but the sceptre has already passed to younger camps.

Visit with me the Comstock, then, in this year of grace 1896 and let us briefly note the condition of affairs. We climb with the railroad from well-watered Carson's sea-green circle, through wild gorges and along the crest of ridges that look down upon thousands of prospect holes. Every moment the view broadens and brightens. We climb through a barren, lonely, forsaken land of strange, shining grays and browns, clear cut in a marvellously invigorating mountain atmosphere. The desert slopes endlessly away from the eternal mountains, and a soft, golden glow, like that which pervades one of Gérôme's Egyptian paintings lingers in the far east, across the yellow sands, the silver sage brush. High peaks, treeless even to their deepest cañons, cold, severe, and yet so wonderfully chiselled and rounded that the heart leaps to behold them, are ranged about the amphitheatre wherein the cities of the Comstock were founded thirty-seven years ago. All is revealed in successive landscapes, as the railroad carries one upward from the valley floor of the Carson—itself a high plateau—toward these cities in the clouds, still strong and patient, still able to endure until the end.

A little space farther and higher, and the train

Treadwell Gold Mines, Douglas Island, Alaska.

swings along the side of that old-time Slippery Gulch, down which the pioneers slid on rainy mornings, as they climbed painfully, with more or less reprehensible language, to their new-found placers on Gold Hill. There, in the hollow and cañon-crossed head of the gulch, and on its precipitous sides, so steep that as one explores the outlying streets his hand almost touches the rise of the hill, the city of Gold Hill abides, and all the world-famous South End mines of the Comstock honeycomb the vein beneath it.

Although Gold Hill played a minor part in the great trilogy of the Comstock, it shows, even more than Virginia City, that most striking feature of the true Western mining camp, the adoption of the natural surface of the earth, no matter how steep, rocky, or difficult of access, as good enough to build upon. A little levelling may have been necessary to keep streets and buildings from rolling to the bottom of the gulches, but as soon as the stern requirements of the law of gravity were to some extent satisfied the pioneers ceased the struggle. Every inch of ground that a house can be made to cling to is occupied, and the roof of one line of dwellings is often on a level with the basements of the next higher row. So strenuously have men seized upon and utilized every point of vantage that the houses seem piled on top of one another in the centre of the town, while outside scattered dwellings climb the ridges like human beings, leaning forward against the slope and resting in groups. One sees in such an old mining camp so much that seems to subvert the ordinary laws of architectural stability, so many leaning towers and walls, that he is fain to believe that the whole mass of the town is in reality bolted and iron-plated together and fastened to the mountain slopes. In the deep horseshoe-shaped quarry pit a mile across that by some curious misnomer was called Gold Hill, neighbour can talk to neighbour almost as in a theatre, so wonderfully do whole streets and blocks of buildings overhang those beneath them.

This Gold Hill, this irregular and immense mass of overcrowded structures, some of rough-hewn black timbers, some costly and pretentious, but all mingling with and actually jostling the shanties; these sheds, barns, and rude cheap cottages; these bits of fence and sidewalk; these crumbling steps leading from street to street and from house to house, fitter for goats than for human beings; these black chimneys, piles of rusting machinery, high-roofed mills, and acres of white and brown dump heaps encroaching on the town or sloping away into gulches—all give one a vivid impression of what life was in the days when the place was crowded to the brim. In those days it was not a city in fact, nor yet a town; it was simply one great communal dwelling or primitive apartment house. It still has a communal aspect, for the lessening population retires year by year from the outskirts, leaving shanty after shanty to rot there, and occupies the better buildings.

The railroad carries us through the Divide a few hundred yards, and the last and greatest panorama of the Comstock chain instantly sweeps into view. Sugar Loaf and the Flowery Range are fully revealed, the North End mines and the historic metropolis of the silver miners lie spread out on an irregular sloping mound broken by ravines and hollows, rising to the mountains of granite on the west, and sinking into vast cañons east. It is larger than Gold Hill, and slowly becomes more impressive, though not so immediately picturesque. It lies marvellously open to all the winds that blow, and they seem to gather here from the western half of the continent. The city is a forest of chimney pots of all shapes and sizes and every conceivable manner of patent, aimed at circumventing winds of every sort, even perpendicular ones. Here ends, almost in the heart of the town, this mountain railroad flung out into a wilderness of rocks for the sake of the silver mines, just as in California a broad, superb stage road is flung twenty-six miles out into the Coast Range to carry passengers to the Lick Observatory, on the top of Mount Hamilton.

What is the visitor's first impression, supposing that he knows the past of the Comstock? Not disappointment, but a poignant regret, almost strong enough to be called a personal sorrow. Wreck, decay, abandonment, make the dominant note of the scene. Many of the great mills stand idle over their vast gray waste heaps, rotting slowly down to death and chaos. Inside, the stamps hang rusting in long rows, "hung up," as the miners say. No clang and clatter is heard —no strong, deep roar of the massive machinery that filled the cañons and the crowded streets in bonanza times with constant undercurrents of thrilling, pulsing sound night and day alike while millions of dollars' worth of bullion poured out of the smelters.

The catastrophe—for it is nothing less—does not seem to attract any one's serious attention, hardly becomes formulated into a casual phrase. One is told elsewhere that "times are dull on the Comstock," that Virginia City "is not what it used to be." One hears on the Comstock itself that "after a little things will pick up"; that there is plenty of good rock down in the mines; that the trouble is with "the ring"—the speculators who are trying to control something or other; that pretty soon the lower levels will be pumped out, and work resumed in that most torrid mining belt known to modern science; that matters are nearly ready for a great simultaneous revival of enthusiasm. Nor is this merely the despairing cry of unacknowledged defeat; it is something almost too sacred to be put into words. It is neither more nor less, in its higher manifestations, than the sublime spirit of patriotism, defending to the last the lonely mountain fortress of the miner State of the Comstock. These men and women who built Gold Hill and Virginia are unconsciously loyal to something that never took visible form in the chain of American institutional development. The township, county, and political state have not become as living realities to them as the laws, customs, and social order of the Comstock. The cheerfulness and even buoyancy, therefore, with which the community as a whole maintains itself is something that passes human understanding.

I stood and watched a man at the ore heap in a mill. He was a very strong, tall man, blond-bearded, with flakes of gray in his hair; a kindly, sweet-tempered mountaineer, and he knew the mill and mines as a child knows the rooms of the house in which he lives. "Our mine is doing a little better," he said with a smile of pleasure. "They think up at Ophir that they'll strike it rich before any one else, but maybe they're mistaken about that."

Everywhere the same *esprit du corps* exists; it goes far to explain the victories of the Comstock. Everywhere, in spite of the real decay and wasting plant of many enterprises, things are kept in some degree prepared for the expected revival of mining interests. In outward appearances, the community has fallen upon hopelessly hard times; but the potential capacity of mines and mills is still enormous, and if large bodies of pay ore were uncovered the really important properties would almost instantly resume work at full speed. After twenty years of borrasca, an air of constant readiness still pervades every department. The boys that sharpen drills, the bosses and surveyors and superintendents, all dwell in this hopeful atmosphere and knit themselves closer and closer to the thoughts of the unknown mine depths.

Even while this chapter was being written these unconquerable Comstockers made a discovery that may prove a new bonanza. In previous chapters the formation of the chain of mines has been described. In the chapter on Sutro Tunnel it was explained that many ledges were cut by that great adit, and that some of these ledges might prove valuable. As it happens, there is a wide ledge of rock, rich in a few places on the surface, that lies east of and parallel to the Comstock, the centre ridges of both lodes being perhaps a mile apart, and the lodes possibly uniting somewhere in the depths. The long-neglected ledge, the Brunswick, will now be thoroughly explored from end to end—a work of many months. Ore now taken out of a three-foot vein in the extension of Chollar and in Hale and Norcross territory is very rich, and much resembles Comstock ore. Being drained at a depth of 1,600 feet by the Sutro Tunnel, water can be handled cheaply should bonanzas exist in the Brunswick, and it is possible that in a few years a fourth line of deep-mine works will be built far east, beyond the long-neglected third line of shafts.

The future is a "sealed seed plot," and no one knows what has been sown therein for these great-hearted Comstock miners. But how dramatic a possibility it is, that while all the world is being stirred by the extraordinary mining events of recent months, not only in America, but in nearly every other country under the sun, the ancient strength of the Comstock is perhaps about to return!

CHAPTER XXII.

THE AMERICAN MINER OF TO-DAY.

THE American miner of to-day is toiling steadily on, in his countless camps, making history more rapidly than ever before. The yield of our mines fluctuates to some extent, but every decade shows enormous gains. According to official statistics, the total value of the mineral products of the United States in the two years 1893 and 1894, the last period for which we have authoritative data, was, in round numbers, $1,169,000,000. This includes the metals, iron leading in value, with silver, gold, copper, lead, and zinc following in the order named; it also includes fuels, structural materials, abrasive materials, minerals used for chemical purposes, mineral pigments, and many miscellaneous products of our mines.

The vast growth of all departments of American mining industry can be plainly illustrated by a few statistics. In 1845 the entire United States produced but 100 tons of copper; in 1890 a single mine, the Calumet and Hecla of Michigan, produced 26,727 tons; in 1894 the total product of the Unitd States was 158,120 tons. The world-famous Calumet and Hecla has produced over 500,000 tons of copper since its discovery and has paid nearly $45,000,000 in dividends. In 1825 the lead product of the United States was but 1,500 tons; the notable Illinois and Missouri deposits brought this up to 30,000 tons in 1845, but the annual yield sank to 20,000 tons, and far below, until Eureka, Leadville, Cœur d'Alêne, and other great groups of mines carried it to the maximum of 1893—some 230,000 tons. Similar illustrations might be given in every other department of mining. As far as civilization is concerned, the iron industry is the most suggestive of all. According to Mr. Birkenbine's monograph on Production of Iron Ores (United States Reports), the approximate total iron product of the world is 57,000,000 tons, of which the United States, ranking by far the first, produces 16,300,000 tons.

Such impressive sum totals may serve to illustrate the greatness of these rapidly developing underground industries. Better, however, are glimpses of a few of the newer American mine groups which are making fortunes for men, especially from the precious metals.

The Cripple Creek district is situated upon some rounded hills from seven to twelve miles southwest of Pike's Peak, Colorado, at an elevation of from 9,000 to 10,800 feet. Some early prospectors organized Mount Pisgah district here in 1874, but failed to handle the ores at a profit. An excitement occurred in 1884, when 5,000 people camped here on "salted" claims. Some of these claims afterward proved to be valuable, though sold on false pretenses. Along in 1890 numbers of tenderfeet, or "alfalfa miners," as the prospectors called them, began to take up claims in the twice-abandoned camps. After a while, by a little stream in the aspen thickets, a lame burro, a dog with a broken leg, and a man with a broken arm are said to have given the chief camp its name. Notable discoveries were soon made, changing penniless men into millionaires, and by 1894 the Cripple Creek excitement was something wonderful to see.

Cripple Creek mining towns have continued to grow since then; ten or twelve camps, with a total population of some 25,000, lie within an area of sixteen square miles. Something like a hundred mines are shipping ore to the cyanide-process mills at Florence, on the Arkansas. The mines in 1892 yielded $600,000; in 1893, $2,100,000; in 1894, $3,000,000; and in 1895, nearly $8,000,000. This one district has made Colorado the leading gold-producing State in the Union, the total output of gold in 1895 being $17,340,495.

Another district attracting attention is the Mercur of Utah, in the Oquirrh Mountains, where a Government mule, kicking a piece of rock, revealed the gleam of gold to a lucky teamster named Allen. Here, and in the adjacent Tintic range, are rapidly growing camps, producing half the precious metals of Utah.

But perhaps no portion of the great mineral belts of America is being more rapidly developed at present than California, long to some extent neglected, and yet possessing many very famous mines and enormous undeveloped resources. The noted Idaho and Eureka ore body yielded over $11,000,000 in seventeen years, and paid over $5,000,000 in dividends. The Hayward, the Keystone, and the Oneida of Amador; the Massachusetts and the Gold Hill of Nevada; the Sierra Buttes; the Plumas Eureka and the Standard Consolidated, are equally familiar names to California gold miners. About eighteen thousand miners are regularly employed in twenty-four hundred well-established mines, in different parts of the State. The Pacific coast north of Mexico, and including Nevada and Arizona, has fully a thousand stamp mills, carrying about fifteen thousand stamps and costing, with other machinery, fully $20,000,000. Half of this investment is in the State of California.

The American prospector, cheerful and energetic as ever, is at work in hundreds and thousands of once-abandoned camps, whose ledges could not be profitably worked by old methods. He is busy revealing new treasures in the islands of Unga and Unalaska, in camps along the Yukon, in the south-coast Alaskan gold fields, and in British Columbian districts, such as Cassiar, Caribou, and Rossland. Prospectors are searching mile by mile the mountains of Washington, Oregon, and California, all the way down to the Mexican line. The entire length of the great Rocky Mountain mineral belt is being prospected more vigorously than ever before. Only the other day, out in the Mojave desert, a large district was found, where placer gold and rich quartz veins abound and new camps are there being established. One of these is called the Randsburg. As usual, stories of the rediscovery of the long-lost "Gunsight" and "Pegleg" mines come from various parts of the desert. Every issue of the mining journals contains hundreds of items from new camps, illustrating the toils and triumphs of the prospector as he tests surface gravel claims, or tunnels for ancient river channels under lava beds, as in Idaho, or finds in all sorts of unheard-of places the gleam of minerals, useful or precious.

Much has been said in this book about the prospector, and more might justly be added, for he still remains the pioneer, differing in essential details from the miner, the speculator, and the capitalist. He lives a free, careless, outdoor life, and he has blazed the trail for others all the way from Missouri and Texas to Alaska and California. Though better fitted for his work than he was fifty years ago, and better supported by those who make fortunes from his discoveries, the American prospector of to-day has not essentially changed; he is still a wide traveller, an heroic adventurer, a man of infinite resource and homely, well-tried virtues. Sometimes, like Dick Gird, he reaches a district "with a pair of blankets and six dollars in money," and finds a million-dollar mine; sometimes, like Major Reading, he "loads a train of mules" with gold nuggets from new placers, but far more often than otherwise the wilderness, which takes him to its heart, sweetens his many hardships with such devotion to his chosen work that all his life he searches for hidden treasure, and rarely makes more than his grub stake.

The whole American mining field broadens year by year, not only on the frontier, but in many of the staid and long-settled communities. Perhaps, with improved methods, even the gold deposits of the Appalachians, from Nova Scotia to the Carolinas and Georgia, can be profitably worked on a large scale. The best authorities declare that the cost of roasting and chlorinating ores in a hundred-ton plant is now less than three dollars per ton. By the cyanide process it is even less, in ores adapted to this useful method. A few years ago these processes cost ten dollars and even twenty dollars per ton, but large bodies of low-grade ores, long necessarily neglected, can now be handled with profit.

So promising are recent developments that it would not surprise mining authorities if the annual gold yield of the United States, British Columbia, and Alaska reached the hundred-million-dollar mark by the close of the century; nor does it seem unlikely that the total yield of different countries will add to the world's gold stock within the next ten years more than $2,500,000,000. A period of higher property values and of larger business prosperity is clearly indicated by this astonishing revival of mining interests. Evidently the story of the miner and his mines will go on for ages to come.

I may say, in closing, that there has never been a time when so many attractive and important books upon mining were being published by specialists. Besides the United States Government Annual and Census Reports and the invaluable volumes of the leading mining and engineering periodicals of America and Europe, I note among recent publications Rothwell's Mineral Industry, Statistical, etc., a masterpiece of work; Eissler's Metallurgy of Gold, largely devoted to new processes; Hatch and Chalmers's Gold Mines of the Rand; and Kemp's Ore Deposits of the United States. Really monumental works upon the history. mechanics, and metallurgy of mining are each year appearing in greater numbers. The noble industry of which I have given only a glimpse is in the hands of highly trained specialists, and everywhere, from the arctic circle to the auriferous conglomerates of South Africa, these specialists are shaping its magnificent future.

THE END.

THE BEGINNERS OF A NATION. A History of the Source and Rise of the Earliest English Settlements in America, with Special Reference to the Life and Character of the People. The first volume in A History of Life in the United States. By EDWARD EGGLESTON. Small 8vo. Cloth.

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